



IMPERIAL AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI.

WEDNESDAY, 25th JULY, 1888.

Dr. J. C. Cox, F.L.S., Vice-President, in the Chair.

Mr. R. T. Baker, Sydney, was elected a Member of the Society.

The Chairman announced that the next Excursion had been arranged for Saturday, August 18th. Members to meet at the Botany Tram Terminus on the arrival of the 10.6 a.m. tram from Bridge Street, to proceed to La Pérouse.

DONATIONS.

"The International Scientist's Directory, 1888." *From the Hon. W. Macleay, F.L.S., &c.*

"The American Naturalist." Vol. XXII., No. 256 (April, 1888). *From the Editors.*

"Bulletin of the American Geographical Society." Vol. XIX., Supplement, 1887; Vol. XX., No. 1 (1888). *From the Society.*

"The Sixteenth Annual Report of the Board of Directors of the Zoological Society of Philadelphia (1888)." *From the Society.*

"Summary Report of the Operations of the Geological and Natural History Survey of Canada to 31st Dec., 1887, being Part III., Annual Report of the Department of the Interior, 1887." *From the Director.*

"Report on the Geological Features of the Mackay District, Queensland." By R. L. Jack, Government Geologist. *From the Director, Geological Survey of Queensland.*

"Proceedings of the Zoological Society of London, for the year 1887." Part IV.; "Abstracts of Proceedings," 15th May and 5th June, 1888. *From the Society.*

"The Quarterly Journal of the Geological Society of London." Vol. XLIV., Part 2 (No. 174), 1888. *From the Society.*

"Calendar of the University of Sydney for the year 1888."
From the University.

"The Journal of the College of Science, Imperial University, Japan." Vol. II., Part 1, (1888). *From the President of the University.*

"Zoologischer Anzeiger." XI. Jahrg., Nos. 280 and 281 (1888). *From the Editor.*

"Feuille des Jeunes Naturalistes." No. 212 (June, 1888).
From the Editor.

"Memoirs of the Geological Survey of India,—Palaeontologia Indica." Ser. xiii. Vol. I., Part 7 (1887). *From the Director.*

"Proceedings and Transactions of the Queensland Branch of the Royal Geographical Society of Australasia." 3rd Session, 1887-88. Vol. III., Part 1. *From the Society.*

"The Transactions of the Entomological Society of London for the year 1888." Part 1. *From the Society.*

"Proceedings of the Royal Physical Society, Edinburgh." Session 1886-87. Vol. IX., Part 2. *From the Society.*

"Mittheilungen aus der Zoologischen Station zu Neapel." Band VIII., Heft 1 (1888). *From the Station.*

"Tables des Comptes Rendus des Séances de l'Académie des Sciences, Paris." Deuxième Semestre, 1887. Tome CV. *From the Academy.*

"Bulletin de la Société Royale de Géographie d'Anvers." Tome XII., Fasc. 4 (1888). *From the Society.*

"South Australia—Report on the Progress and Condition of the Botanic Garden during the year 1887." By R. Schomburgk, Ph.D., Director. *From the Director.*

"The Victorian Naturalist." Vol. V., No. 3 (July, 1888).
From the Field Naturalists' Club of Victoria.

"The Australasian Journal of Pharmacy." Vol. III., No. 31 (July, 1888). *From the Editor.*

THE INSECTS OF KING'S SOUND AND ITS VICINITY.

PART II.—THE LAMELLICORNES.

By WILLIAM MACLEAY, F.L.S., &c.

Family SCARABÆIDÆ.

Sub-Family COPRIDES.

107. TESSARODON VARIOLOSUS, n.sp.

Round, very convex, black, sub-nitid. Head coarsely punctate, bidentate in front, with a notch on each side instead of the outer dentation of the other species of the genus, and rounded at the sides and in front of the eyes. Thorax much wider than the head, and twice as wide as long, coarsely punctate—the punctures sub-elongate and variolose, the anterior angles prominent and acute. Elytra wider than the thorax, and much wider than long, the base a little emarginate with the humeral angles rather acute, rounded on the sides and apex, finely striate: the striae formed of two very thin close parallel lines, with the interstices, except near the humeral angles, flat, and each marked with two rows of punctures. The posterior tibiae spurred as in *T. angulatus*, Westwood.

Long. $2\frac{3}{4}$, lat. 2 lines.

This species most resembles the *Ateuchus Hollandica* of Fabricius (*Tessarodon*, Hope), but the head of that insect is distinctly quadridentate, and the sculpture of the elytra is more profound.

108. TEMNOPLECTON ROTUNDUM, Westwood.

Mast. Cat. Col. Sp. 2016.

109. TEMNOLECTRON OCCIDENTALE, n.sp.

Round, very convex, black, nitid. Head finely and densely punctate, sex-dentate in front, the inner pair largest, the outer very small, the sides rounded. Thorax transverse, minutely punctate, a little emarginate in front, wider and broadly rounded at the base, fitting close to the base of the elytra. Elytra emarginate at the base, the humeral angles sub-acute, the sides and apex much rounded, very finely striate-punctate, with the interstices smooth and flat. The tibiae are much curved, the posterior ones with a long acute spine on the inner apex.

Long. $2\frac{1}{4}$, lat. 2 lines.

110. TEMNOLECTRON LUCIDUM, n.sp.

Smaller and more globular than the last species, more nitid, and generally more minutely punctate, the six dentations of the clypeus are a little larger, the minute striations of the elytra are more effaced, the punctures almost obsolete, the spur of the hind tibiae acute and a little curved.

Long. 2, lat. $1\frac{1}{4}$ lines.

111. TEMNOLECTRON PYGMÆUM, n.sp.

Very minute, globular, black, nitid. Head smooth, acutely bidentate with a small semi-circular emargination between. Thorax transverse, much wider than the head, the anterior angles acutely produced, the disk very minutely punctate. Elytra very faintly striate, the interstices nearly flat. Hind tibiae slightly curved and flattened, spur very short.

Long. 1, lat. $\frac{3}{4}$ lines.

112. ONTHOPHAGUS ATROX, Harold.

Mast. Cat. Col. Sp. 2025.

113. ONTHOPHAGUS NODULIFER, Harold.

Mast. Cat. Col. Sp. 2058.

114. ONTHOPHAGUS RUFOSIGNATUS, MacL.

Mast. Cat. Col. Sp. 2075.

115. ONTHOPHAGUS DECLIVIS, Harold.

Mast. Cat. Col. Sp. 2035.

116. ONTHOPHAGUS DEVEXUS, n.sp.

Very like *O. declivis*, but of a much coarser and rougher sculpture, black, nitid. Head punctate, rounded, and a little recurved at the apex, with two transverse ridges on the forehead, the upper one very minutely emarginate in the middle. Thorax very much wider than the head, transverse, the anterior angles acute, the sides angularly rounded and covered with sub-variolose, sub-elongate punctures; the male has a strong prominent tubercle in the central line near the base, from which it slopes forwards in a flat surface to the apical margin, presenting a large triangular flat space, with the side angles formed of a strong tubercle excavated a little on the inner side and almost smooth. The elytra are scarcely so wide as the widest part of the thorax, distinctly but not deeply striate, the interstices wide, a little convex, minutely punctate, and rugose. Legs piceous, the anterior tibiae more strongly quadridentate than in *O. declivis*, with the terminal spur stronger and more recurved. Female unknown.

Long. 6, lat. 4 lines.

117. ONTHOPHAGUS FISSICEPS, n.sp.

Black, nitid. Head with two transverse ridges, one on the clypeal suture, the other between the eyes and rounded in front; the head up to the first ridge quite smooth, from that to the clypeal suture very slightly punctate; the clypeus densely and strongly punctate; the anterior angles of the head are acute and laterally produced, the clypeus is narrowed towards the apex, much recurved and emarginate. The thorax is of a waxy gloss, very transverse, rounded on the sides and base, the anterior angles

very prominent and broadly truncate, the apical portion retuse and quite smooth; the rest of the disk, the middle of the base excepted, very rugosely punctate; a large protuberance forming two flattened triangular horns, divided by a semi-circular emargination, extends from the highest part of the front of the thorax upwards and forwards over the retuse portion; on each side is a small obtuse protuberance; the fovea on each side is smooth, deep and impunctate. Elytra sub-opaque, striate, the interstices sub-convex; both striæ and interstices stronger towards the sides and minutely punctate. The anterior tibiæ strongly quadridentate. Male specimens only.

Long. 6, lat. $3\frac{1}{2}$ lines.

118. ONTHOPHAGUS INTEGRICEPS, n.sp.

In many respects resembling *O. fissiceps*, but the clypeus is not emarginate and very slightly recurved; the anterior angles of the head are laterally produced, but quite round; the space between the clypeal suture and the upper transverse ridge is much larger and more densely punctate, and the upper transverse ridge is straight and considerably elevated, and has the angles and the middle of its apex slightly prominent. The thorax differs in having the sides more bulging in the middle, the anterior angles quite as prominent, but rather acute; the discal protuberance short, scarcely emarginate in the middle, and with the angles square and not projecting; the lateral tubercles are strong and conical. In all else like *O. fissiceps*. One male.

Long. 6, lat. $3\frac{1}{2}$ lines.

119. ONTHOPHAGUS SALEBROSUS, n.sp.

Black, nitid. Head smooth behind, without the two transverse ridges, the position of the first ridge shown by a short curved line only showing on each side near the eyes, all in front of that minutely punctate, the anterior angles broadly rounded and very little prominent, the clypeus rounded in front, with the extreme apex slightly reflexed and rather truncate. Thorax much bulged out at the sides, transverse, acutely angled anteriorly, roughly and

rugosely punctate, a small smooth retuse space near the anterior margin, with two short tubercles above, divided by an emargination on the median line and a smaller obtuse tubercle on each. Elytra finely striate, the interstices each with a row of small round tubercles, some of them forming occasionally an almost continuous row. Pygidium rugose and punctate. Anterior tibiae not very strongly quadridentate, the posterior rather slight. One specimen.

Long. $3\frac{1}{4}$, lat. $1\frac{3}{4}$ lines.

120. ONTHOPHAGUS BICORNIS, n.sp.

Piceous, nitid, the thorax with a reddish-purple tinge. Head hemispherically rounded and recurved in front, in the male slightly pointed, smooth, a curved transverse ridge on the clypeal suture, a short acute horn on each side a little behind and inside the eye. Thorax transverse, much bulged out on the sides, extremely minutely punctate; the anterior angles slightly prominent, the apical face shortly retuse with a rather broad protuberance in the middle over the retuse portion, emarginate in the middle and rounded at the angles, and a small sub-acute tubercle on each side of it. Elytra scarcely as wide as the widest part of the thorax, punctate-striate, the striae distinct, but not profound except near the sides. The female is without prominent horns or tubercles, and has the head more punctate.

Long. 3, lat. $1\frac{3}{4}$ lines.

This species most resembles *O. purpureicollis*, MacI.

121. ONTHOPHAGUS PROPINQUUS, n.sp.

Very near the last described species, but entirely black, the apex of the clypeus more acuminate, the horns on the back of the head smaller and more obtuse, the thorax more distinctly punctate, the retuse part much smaller, and the prominences above it small, the elytra strongly punctate-striate, and the interstices slightly convex and very minutely punctate.

Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

122. ONTHOPHAGUS VILLOUS, n.sp.

Black, nitid, cinereo-villose chiefly on the head anterior thorax and under surface, the elytra reddish-piceous. Head punctate, the clypeus turned up and emarginate at the apex, the lateral angles of the head round and dilated, the transverse ridge on the clypeal suture scarcely raised, the posterior transverse ridge rather elevated, with a sub-acute conical horn on each side behind the eye. Thorax punctate but not very densely, transverse, the median line distinct, a very short retuse space in front which is coarsely and sparsely punctate, and above it in the middle a short broad flattened protuberance, curved a little upwards and overhanging a little the retuse portion. The elytra are less wide and not longer than the thorax, reddish-piceous, sub-opaque, striate-punctate, the striæ broad and shallow, the punctures rather large and very shallow, and the interstices sub-convex, the lateral striæ more deep. The thighs are red, and the legs generally slenderer than usual.

The female scarcely differs from the male.

Long. $2\frac{3}{4}$, lat. $1\frac{3}{4}$ lines.

123. ONTHOPHAGUS CRUCIGER, n.sp.

Black, very nitid. Head nearly smooth behind the upper transverse ridge, punctate between the two ridges, and densely punctate on the clypeus, a little recurved and slightly emarginate at the apex, the anterior transverse ridge straight, the posterior rather more elevated and slightly emarginate in the middle. Thorax scarcely transverse and finely punctate, with a large red spot occupying nearly the whole of each side. Elytra about the width of the thorax and of the same length, finely punctate-striate, the interstices smooth, red, with a vitta on the suture very broad on the basal part, and a fascia a little behind the middle, black. Thighs red.

Long. $1\frac{1}{2}$, lat. 1 line.

124. ONTHOPHAGUS MINUSCULUS, n.sp.

Nearly identical in form and sculpture with the last, but the thorax entirely black, the elytra more deeply striate-punctate,

the interstices minutely punctate and slightly convex, with the suture and a broad middle band black, the rest red. The legs are piceous.

Long. $1\frac{1}{4}$, lat. $\frac{3}{4}$ line.

125. *ONTHOPHAGUS RUBESCENS*, n.sp.

Entirely of a dark reddish colour, excepting the head, the middle of the thorax, and the scutellar region, which are blackish, moderately nitid. Head broadly rounded and somewhat reflexed in front, the transverse ridges scarcely raised. Thorax finely and not densely punctate, the elytra shallowly striate-punctate, the interstices minutely punctate. The sexes scarcely differ.

Long. $1\frac{1}{4}$, lat. $\frac{3}{4}$ line.

126. *ONTHOPHAGUS HUMERALIS*, n.sp.

Black, very nitid. Head smooth, the lateral angles rounded and laterally prominent, the clypeus slightly rugose, broadly and shallowly emarginate in front, the anterior transverse ridge scarcely traceable in the male, the posterior with two short strong triangular horns, divided by a rectangular emargination. Thorax finely and thinly punctate without any retuse portion. Elytra very finely striate-punctate, the interstices flat and smooth, with the humeral angles and extreme apex of a deep piceous red. Thighs piceous.

Long. $1\frac{3}{4}$, lat. 1 line.

127. *ONTHOPHAGUS ACUTICEPS*, n.sp.

Black, very nitid. Head smooth in the male, the clypeus very minutely punctate on the reflected border, and sub-acutely pointed upwards at the apex; in the female the head is punctate, and the clypeus transversely striolate and rounded in front; a short obtuse horn on each side between the eyes. Thorax very finely punctate, a little retuse in front, surmounted by four small tuberosities, the two middle ones separated by a slight emargination only from one another, and by a deeper emargination from the others; these tuberosities are not noticeable in the female.

Elytra strongly striate-punctate, the interstices slightly convex. Legs piceous.

Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

128. *ONTHOPHAGUS INCANUS*, n.sp.

Entirely of a sub-nitid bronzy black, coarsely punctate, and densely covered with a rather short erect grey pubescence. The head is finely transversely striolate, the clypeus very shallowly emarginate at the apex, the posterior transverse ridge very slightly more elevated at the sides than in the middle. Thorax rugosely punctate, almost vermiculate, the median line well impressed on the basal half. Elytra finely striate, the interstices coarsely and rugosely punctate. One female specimen.

Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

Nine other species of this genus are represented in the collection, but all by female specimens, perhaps belonging to species of which the males have already been described.

Sub-Family APHODIIDES.

129. *APHODIUS LIVIDUS*, Oliv.

Mast. Cat. Col. Sp. 2087.

130. *AMMÆCIUS SEMICÆCUS*, n.sp.

Oblong-oval, sub-convex, black, sub-nitid. Head transverse, minutely punctate,, the anterior part of the eye only showing from beneath the thorax, the angles in front of the eyes sub-acute, narrowed from thence to the apex, which is broadly rounded and lunately emarginate. Thorax a little wider than the head, nearly square, all the angles nearly rectangular, finely punctate and without trace of the median line. Elytra about the width, and about twice the length of the thorax, and of a more brownish-black colour, strongly punctate-striate, the interstices raised and having a crenulate appearance from the depth of the punctures in the striæ. Legs piceous.

Long. $1\frac{3}{4}$, lat. $\frac{2}{3}$ lines.

131. *AMMÆCIUS OCCIDENTALIS*, n.sp.

In form like the last species, but smaller and of a piceous colour and nitid. Head as in the last, but the eyes entirely invisible from above. Thorax slightly transverse and rather more sparsely punctate than in *A. semicæcus*. Elytra finely and deeply striate. punctate, the interstices smooth and sub-convex.

Long. $1\frac{1}{2}$, lat. $\frac{1}{2}$ line.

132. *AMMÆCIUS ELONGATULUS*, n.sp.

Black, opaque, of sub-cylindrical form. Head short, rather broadly emarginate in front. Thorax slightly transverse, scarcely rounded on the sides, the apex and base of equal width, very finely and thinly punctate. Elytra of the width of the thorax, and two and a-half times the length, parallel-sided and striate, the striæ groove-shaped, with the interstices raised into narrow costæ.

Long. $1\frac{1}{2}$, lat. $\frac{1}{2}$ line.

133. *AMMÆCIUS RUGICOLLIS*, n.sp.

In form resembling *A. occidentalis*, but smaller and entirely of a piceous-red and sub-nitid. The head is scarcely perceptibly emarginate in front, almost truncate, punctate, the anterior edge of the eyes just visible. Thorax transverse, punctate, the punctures large and variolose-looking. Elytra striate, the interstices convex, not punctate.

Long. 1, lat. $\frac{1}{2}$ line.

Sub-Family HYBOSORIDÆ.

134. *PHLÆOCHROUS HIRTIPES*, MacL.

Mast. Cat. Col. Sp. 2096.

Sub-Family GEOTRUPIDÆ.

135. *BOLBOCERAS REICHEI*, Guér.

Mast. Cat. Col. Sp. 2122.

136. *BOLBOCERAS ROTUNDATUM*, Hope.

Mast. Cat. Col. Sp. 2124.

137. *BOLBOCERAS RUBESCENS*, Hope.

Mast. Cat. Col. Sp. 2125.

138. *BOLBOCERAS INGENS*, n.sp.

Of a chestnut colour, nearly black on the head and thorax, rather nitid. Head densely and rugosely punctate, rising into a broad strong projecting and slightly recurved horn at the apex of the clypeus, and vertical and slightly retuse on the forehead. Thorax three times wider than long, deeply emarginate at the apex, enclosing the head to the middle of the eyes, much amplified and rounded to the base, which is broadly rounded, the sides densely ciliated and crenulate, the anterior portion of the disk vertically retuse showing three excavated and smooth surfaces—the middle one of crescentic form, with a prominent protuberance on each side, the others more profoundly excavated, the rest of the disk largely and coarsely punctate. Elytra not so wide as the thorax and much wider than long, emarginate at the base, rounded on the the sides and apex, and 14 punctate-striate. Beneath very hairy; anterior tibiæ 5-dentate. One male specimen.

Long. 10, lat. 7 lines.

139. *BOLBOCERAS CORNUTUM*, n.sp.

Piceous-red, nitid. Head small, densely punctate, the vertex raised into a long straight rather obtusely pointed horn, with the transverse raised line between the eyes truncate in the middle. Thorax about twice as wide as long, the sides moderately ciliated, not serrated, and much bulged out towards the posterior angles; the base broadly rounded, a large transversely rounded smooth hollowed-out space occupying the middle of the disk, with a strong compressed tubercle on each side of it, and a large patch of rough large punctures between the hollowed-out space and the sides, the rest of the disk smooth. Elytra much narrower and little longer than the thorax, finely striate-punctate. The female has, instead of the horn, a small bifid tubercle on the forehead and no tubercle on the thorax.

Long. 8, lat. 5 lines.

140. *BOLBOCERAS HIPPOPUS*, n.sp.

This species is very like the preceding, but differs in being much smaller, in the more elongate horn on the vertex, in the transverse line on the clypeal suture being a little sinuate, in the thorax, which has in the front and middle a deep well-formed horse-shoe-shaped excavation, deeply impressed on the median line, with a short laterally compressed horn on each side, and in the elytra being more strongly striate-punctate.

Long. 6, lat. $4\frac{1}{4}$ lines.

Sub-Family TROGIDES.

141. *TROX DILATICOLLIS*, n.sp.

Black, very opaque, squamose. Head a little triangular in front, with two minute transverse tubercles on the forehead. Thorax transverse, much dilated and reflected at the sides with a notch about the middle, and a large excised emargination from that to the base, which is bisinuate and not wider than the apex; the discal ridges on the thorax are in three pairs and nitid; the pair nearest the middle nearly reach the base and bulge apart a little in the middle, the next pair are divided in the middle and continuous at base and apex, the outer pair appear as a short ridge at the base with a very short one above, not in the same line. Elytra of the width of the thorax at the base and four times the length, amplified and rounded towards and at the apex, with ten rows of well-marked equi-distant punctures, separated alternately by very fine ridges, sub-costate near the base and of elongate minute tufted tubercles behind, and distant minute tubercles on flat interstices.

Long. 8 lines.

142. *TROX ALATUS*, n.sp.

Black, very opaque, sparingly squamose. Head with two small tubercles in front, the apex of the clypeus rounded. Thorax very transverse, the sides entire and a little rounded, very broadly dilated, flat and reflected, much narrowed behind in a

semi-circular sweep, largely lobed and biemarginate at the base, a little rounded and elevated at the apex; the disk thinly and sub-rugosely punctate with a sub-nitid ridge on each side of the median line converging a little behind and not reaching the base, and two very short basal ridges on each side of it. Elytra oblong-ovate and nearly three times the length of the thorax, with 10 rows of large shallow punctures on each elytron, the interstices being alternately finely costate and granulate, or minutely tuberculate. Legs long, the anterior tibiae without the usual tooth on the middle of the outer side.

Long. 7 lines.

143. *Trox asperatus*, n.sp.

Black, very opaque, rough. Head broadly rounded at the apex, with a reflected margin, the forehead with a short transverse ridge divided in the middle. Thorax very transverse, the sides very little dilated, slightly rounded and crenulated, a small emargination above the posterior angles which are square; the base a little rounded, lobed in the middle, and wider than the apex, the disk rather coarsely and faintly punctate with three pairs of strong glossy longitudinal ridges—the first pair diverging in a curve in the middle and not reaching the base, the next pair continuous from base to apex excepting a slight break in the centre, the outer pair on the basal half only. Elytra broadly ovate, wider than the thorax and more than three times the length, with 10 rows of coarse, rough, rather shallow punctures and granules, with the interstices alternately of elongate, obtuse, glossy tubercles and small round ones, the third and fourth interstices have the tubercles largest and are sub-costate at the base. The legs are short and strong, the anterior tibiae have one strong tooth on the outer apex, with two small ones about the middle.

Long. 7, lat. 5 lines.

144. *Trox nodicollis*, n.sp.

Black, very opaque, squalid. Head coarsely punctate, bituberculate in front, and sub-triangularly rounded and reflexed at the

apex. Thorax very transverse, punctate, slightly rounded on the apex, advanced at the anterior angles, the sides from thence sloping outwards for one-third of the length, then shortly and lightly emarginate, and again near the posterior angles more deeply emarginate, giving the sides a trilobed appearance, the base is broadly and sub-triangularly lobed, the central pair of longitudinal ridges bulges out in the middle and does not extend to the base, the next is interrupted in the middle, the outer pair is interrupted and occupies only the basal half. The elytra are shortly and broadly ovate, wider than the thorax and about four times the length, with 10 rows of large granulose punctures, the interstices consisting of small squamose sub-elongate tubercles, the 3rd and 5th interstices larger and sub-costate at the base. The anterior tibiae with two strong compressed triangular teeth on the outside, one terminal.

Long. $5\frac{1}{2}$, lat. $3\frac{1}{2}$ lines.

145. *Trox ASPERRIMUS*, n.sp.

Black, opaque, sculpture very rough. Head rather prominently bituberculate in the middle, roughly and rugosely punctate. Thorax transverse, rounded and widened from the anterior angles to behind the middle, then a small rather abrupt emargination, the posterior angles prominent, the base rounded and lobed in the middle, the entire disk so rough and irregular as to make the three pairs of ridges appear like oblong tubercles without order. The elytra resemble those of *T. nodicollis* in form and sculpture, but are much coarser and rougher. Legs short, a minute tooth in the middle of the outside of the anterior tibiae, with one or two extremely minute ones above.

Long. 4 lines.

146. *Trox VITREOMACULATUS*, n.sp.

Black, opaque, squamose. Head with two comparatively large round tubercles in front, the clypeus triangularly rounded. Thorax transverse, the sides with two emarginations forming three conspicuous lobes, the three pairs of longitudinal ridges of normal

form; the second pair near the central ones. Elytra wider than the thorax and three times the length, broadly ovate, with 10 rows of punctures on each elytron, the interstices composed of alternate rows of larger and smaller elongate tubercles, the third and fifth costate at the base, a series of six or seven square or stellar vitreous spots on the second, fourth, and fifth interstices. Legs short and strong, the anterior tibiae with a large sub-bifid tooth on the outer apex, and a small tooth in the middle.

Long. $3\frac{1}{2}$ lines.

147. *LIPAROCHRUS MULTISTRIATUS*, Harold.

Mast. Cat. Col. Sp. 2151.

148. *LIPAROCHRUS GEMINATUS*, Westw.

Mast. Cat. Col. Sp. 2150.

149. *LIPAROCHRUS POLITULUS*, n.sp.

Piceous-red, nitid, of oval form. Head finely punctate. Thorax transverse, the sides with reflexed margins, the anterior angles very acute and prominent, the posterior also acute and pointing a little backwards, the disk finely and equally punctate. Elytra about the width of the thorax and twice the length, striate-punctate; the interstices broad, smooth, and very slightly convex; the colour is a little redder than that of the thorax, and the striae have a slightly crenulate appearance.

Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

150. *LIPAROCHRUS GLOBULIFORMIS*, n.sp.

Of globular form, piceous-red, nitid. Head sub-rugosely punctate. Thorax as in *L. multistriatus*, with acute anterior angles, and rounded posterior ones, but the puncturation is sparser. The elytra are broadly rounded behind, covered with a short cinereous pubescence, and multistriate, the striae very lightly punctate, the interstices narrow and sub-convex.

Long. $1\frac{3}{4}$, lat. 1 line.

Sub-Family MELOLONTHIDES.

151. *MÆCHIDIUS FISSICEPS*, n.sp.

Chocolate-brown, sub-opaque, densely covered with rather coarse variolose punctures, each puncture bearing a small light coloured scale. Head with the clypeus large, projecting laterally in front of the eyes in an acute point, narrowed and biemarginate from thence to the apex, deeply and narrowly emarginate at the apex, prominently and sub-acutely pointed on each side of the emargination, and with the margin rather broadly reflected. Thorax twice as wide as long; the anterior angles acute and slightly produced, the sides very slightly rounded, the widest part being about one third from the base, the anterior third of the sides slightly crenulate, the posterior angles nearly rectangular. Elytra rather wider than the thorax at the base, and three times the length, a little amplified, and broadly rounded at the apex, with on each elytron about twenty very regular rows of rather oblong variolose raised punctures, each furnished with a minute setiform scale, the intervals quite smooth. The anterior tibiæ are rather strongly bidentate at the outer apex, with a minute tooth about the middle.

Long. 5, lat. $2\frac{1}{2}$ lines.

152. *MÆCHIDIUS FROGGATTI*, n.sp.

Dark brown, sub-opaque, of oblong-ovate form, punctate and scaly. Head roughly punctate, the clypeus reflected in front and emarginate but not deeply, the angles in front of the eyes not very prominent as in the last species, and a distinct transverse swelling extends along its middle. The thorax is more finely punctate than in *M. fissiceps*, the anterior angles are more obtuse and produced, the sides slightly but regularly rounded, the posterior angles rectangular, and the base slightly rounded. Elytra not wider than the thorax and about three times the length, strongly punctate in numerous rows, the interstices all very narrow, but the alternate ones showing distinct lines, the row from the humeral angle costiform for a third of its length, the apex of the elytra is

a little emarginate, each elytron being separately rounded. The anterior tibiae are strongly tridentate.

Long. 4, lat. $1\frac{3}{4}$ lines.

153. *LIPARETRUS BADIUS*, n.sp.

Of the group of *L. rubifactus* and *rufipennis*; of a reddish-chestnut colour, nitid, glabrous above, beneath slightly cinereo-villose. Head densely punctate, blackish, the clypeal suture nearly straight, the clypeus narrowed a little to the apex, which is broadly truncate and squarely angled, the angles in the male almost pointed. Thorax transverse, finely punctate, much wider than the head, the anterior angles acute, the sides moderately rounded, the posterior angles and the base broadly rounded, the median line traceable only and very slightly near the apex, a brownish callus near the middle of each side. Elytra wider than the thorax, and nearly as wide as long, densely, finely and rather rugosely punctate, with three rather faint geminate striae, and a strong sutural stria on each elytron, and a small callus near each humeral angle. The propygidium and pygidium large, convex and completely uncovered, and finely punctate. The legs and abdomen piceous-red, the anterior tibiae bluntly tridentate externally, the first joint of the posterior tarsi scarcely so long as the second.

Long. $3\frac{3}{4}$, lat. 2 lines.

154. *LIPARETRUS LANATICOLLIS*, n.sp.

Belonging to the *L. phænicopterus* section. Testaceous, nitid, and, excepting the elytra, cinereo-villose. Head blackish, punctate, clypeus wide, square and reflected in front. Thorax piceous, almost black in front, transverse, thinly and rugosely punctate, truncate in front and rounded on the sides, posterior angles and base. Elytra wider than the thorax and considerably widened towards the apex, very round and a little dehiscent at the apex, distinctly but finely striate-punctate, and of a very pale glossy testaceous colour. Pygidium and propygidium very convex and exposed, and very minutely punctate. Anterior tibiae unidentate, the first joint of the posterior tarsi scarcely so long as the second.

Long. $2\frac{1}{4}$ lines.

155. *LIPARETRUS GAGATICEPS*, n.sp.

Testaceous, nitid, the head and sterna black. Head thinly and minutely punctate, the clypeus broadly rounded and a little recurved at the anterior margin. Thorax transverse, very minutely punctate, rounded behind and on the sides. Elytra wider than the thorax, partially covering the propygidium, and finely punctate with three geminate striæ. The anterior tibiæ unidentate, the first joint of the posterior tarsi about the length of the second, but much thicker.

Long. $1\frac{1}{4}$ lines.

This species will enter into the same group as *L. badius*.

156. *COLPOCHILA TESTACEIPENNIS*, n.sp.

Oblong-ovate, convex, testaceous, nitid. Head brownish, transverse, rather thinly punctate, the clypeus more densely punctate, broadly rounded and reflected at the anterior margin, and bisinuate on the suture; the antennæ are 9-jointed, the first and second normal, the third and fourth small and of equal size, the fifth and sixth as short as the previous two but wider, and the last three forming a short club. Thorax brownish, transverse,—the width twice the length,—thinly and minutely punctate, the anterior angles very acute and prominent, the sides a little rounded and widening to the base, the posterior angles acute, and the base slightly rounded, the whole strongly margined. Elytra pale testaceous with the base and suture a little brown, of the width of the thorax at the base, widening considerably, and very convex towards the apex, about four times the length of the thorax, and thinly and finely punctate with four rather faint geminate striæ on each elytron. Abdomen reddish-testaceous, very thick, the pygidium and propygidium convex and completely exposed, the sterna and thighs cinereo-villose, the anterior tibiæ strongly tridentate, the posterior tibiæ strong and spinous, the first joint of the posterior tarsi not longer than the second.

Long. $7\frac{1}{2}$, lat. $3\frac{1}{2}$ lines.

157. *HETERONYX PICEONIGER*, n.sp.

Oblong-ovate, sub-depressed, piceous, nitid, coarsely punctate, and clothed thinly with soft erect cinereous hairs. Head very transverse, the clypeus extending laterally beyond the eyes, the angles rounded, the apex broadly rounded, and a little reflexed, and the clypeal suture lightly marked and nearly straight. Labrum not showing in front of the clypeus. Antennæ 9-jointed, the last joint of the maxillary palpi truncate. Thorax transverse, wider than the head, more thinly and less coarsely punctate than the head and elytra, the anterior angles acute, the sides narrowly margined and widening a little to the base, the posterior angles rather acute and the base lightly bisinuate. Elytra not wider than the thorax, and nearly four times the length, parallel-sided and rounded at the apex, nearly covering the pygidium, and irregularly and densely rugosely punctate. The under surface is piceous-brown, nitid and less coarsely punctate than the upper surface, the legs are piceous-red and strong, the anterior tibiæ tridentate, the two first teeth very large, the third small, the thighs are much compressed and the posterior tibiæ spinous and setose. The claws strongly toothed below.

Long. $6\frac{1}{4}$, lat. 3 lines.

This species approaches most nearly to *H. rugosipennis*, mihi.

158. *HETERONYX CORPULENTUS*, n.sp.

Of the colour and sculpture of the preceding species but of shorter and stouter form, more convex, more sparsely punctate, and thinly covered with long erect reddish hairs. Head densely punctate, the clypeus broadly rounded as in *H. piceoniger*, but not produced so much laterally beyond the eyes, and more arcuate on the suture, the punctures on the thorax more distant, and those on the elytra considerably sparser. The under surface and legs dark piceous, sparingly punctate, the pygidium uncovered, of rounded triangular form and nearly smooth.

Long. $5\frac{1}{2}$, lat. 3 lines.

An apparent variety of this species is piceous-red on the elytra.

159. *HETERONYX RUFOPICEUS*, n.sp.

Oblong, piceous-red, nitid, densely punctate, almost glabrous. Head short, minutely punctate, the clypeus longer than the head in the middle, slightly projecting laterally beyond the eye, widely rounded in front and a little reflexed, the suture distinct and arcuate, the labrum not showing beyond the edge of the clypeus. Eyes large. Thorax transverse, less densely and finely punctate than the head, the anterior angles prominent but not very acute, the base rather wider than the apex and scarcely bisinuate, and the angles rectangular. Elytra not wider than the thorax and three times the length; densely punctate all over, the punctures larger than those on the thorax. Under surface piceous-brown, coarsely punctate, thinly fulvous-hairy. Legs reddish, thighs short, and broadly bellied, anterior tibiae strongly bidentate.

Long. $4\frac{1}{2}$, lat. 2 lines.

A variety of what I suppose to be this species is of a piceous-black colour.

160. *HETERONYX FROGGATTI*, n.sp.

Of a shorter and broader form than the last, of the same colour, more strongly punctate and glabrous. Head very thinly and clypeus densely punctate, broadly rounded in front, the clypeal suture slightly arcuate, the labrum not showing in front of the clypeus. Thorax transverse, much wider than the head, rather thinly punctate, wider at the base than at the apex, the anterior angles prominent and rather obtuse, the posterior almost rectangular, a small shallow fovea near each side about the middle. Elytra scarcely as wide as the thorax at the base, but widening considerably towards the apex, and a little under three times the length, coarsely but not densely and somewhat rugosely punctate. Under surface slightly punctate and hairy. Anterior tibiae tridentate.

Long. 4, lat. 2 lines.

161. *HETERONYX CAPILLATUS*, n.sp.

Oblong, dark brown, sub-nitid, minutely and densely punctate, and covered with a soft, somewhat silky, cinereous pile. Head transverse, clypeus emarginate in front, with the labrum visible from above, the clypeal suture very little arcuate. Thorax transverse, convex, the sides a little rounded and slightly widened at the base, the anterior angles slightly produced, the posterior rather rounded. Elytra about the width of the thorax and twice the length, sub-truncate at the apex, and minutely rugosely punctate, with three very faint striæ on each side of the suture. Under surface of the same colour as the upper, but less densely punctate and pilose. The legs are piceous and ciliated with long red hair, the hind legs are long, the anterior tibiæ tridentate.

Long $5\frac{1}{2}$, lat. $2\frac{1}{2}$ lines.

162. *HETERONYX BADIUS*, n.sp.

This species very closely resembles the last; it differs in its less parallel-sided form, in its pale reddish colour, in the more projecting labrum, in the more transverse thorax, with the punctures a little larger and the posterior angles more rounded, in the elytra proportionally longer, more dilated behind, and with only one very faint stria on each side of the suture, and in the hind legs less elongate.

Long $4\frac{1}{2}$, lat. $2\frac{1}{2}$ lines.

163. *HETERONYX SUBFUSCUS*, n.sp.

Oblong, chocolate-brown, sub-nitid, extremely minutely punctate, with a shorter sericeous pile than in the last two species. Clypeus rounded and rather broadly margined and recurved in front, except in the middle, which is emarginate, with the upper edge of the labrum showing in front of it; the clypeal suture nearly straight and a little impressed in the middle. Thorax transverse, the anterior angles scarcely produced, the sides much rounded, the posterior angles obtuse. Elytra of the width of the thorax and three times the length, almost parallel-sided, the

humeral angles sub-acute, and the puncturation extremely dense and minute. Under surface very sparsely punctate. Legs moderately stout, the anterior four ciliated with red hair, the anterior tibiæ tridentate.

Long. 4, lat. $1\frac{3}{4}$ lines.

164. *HETERONYX SCUTATUS*, n.sp.

Oblong-oval, reddish-testaceous, nitid, very minutely punctate, almost glabrous. Clypeus emarginate in front, the labrum showing in front of the emargination, the clypeal suture almost straight. Thorax of the same form as in *H. subfuscus*, but more minutely punctate, and with the median line very indistinctly impressed on the anterior half. Scutellum elongate, triangular, obtusely pointed. Elytra slightly rounded on the sides, about thrice the length of the thorax, a little less densely and finely punctate than in *H. subfuscus*, and with one stria on each side of the suture. Under surface and legs reddish-chestnut, sparingly villose, the latter short, the anterior tibiæ tridentate.

Long. 4, lat. $1\frac{3}{4}$ lines.

165. *HETERONYX TRANSVERSICOLLIS*, n.sp.

Oblong, piceous-red, nitid, moderately densely and finely punctate, and clothed with a rather long cinereous pubescence. Head roughly punctate, the clypeus not extended laterally beyond the eye, and rounded and reflexed throughout, excepting a very small emargination in the middle, which scarcely permits the labrum to be seen in front. Thorax twice as wide as long, rather thinly punctate, the anterior angles a little produced and acute, the base slightly rounded and a little wider than the apex. Elytra of the width of the thorax and about four times the length, slightly rounded on the sides, finely but rather thinly punctate and transversely sub-rugose, with one faint stria on each side of the suture. Legs reddish, anterior tibiæ tridentate.

Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

166. *HETERONYX SUBGLABER*, n.sp.

Oblong, piceous-red, nitid, punctate, glabrous. Head densely punctate, the clypeus rather acutely angled in front of the eye, rounded and with reflexed margin in front and emarginate in the middle, leaving the anterior edge of the labrum distinctly visible, the clypeal suture is indistinct and nearly straight. Thorax rather convex, not much wider than long, much rounded on the sides, a little wider at the base than at the apex, the puncturation minute but not crowded, a small fovea near each posterior angle. Elytra the width of the thorax and a little over twice the length, parallel-sided, rather finely and sparsely punctate, with a well-marked stria on each side of the suture. Underneath thinly punctate, with reddish hair, anterior tibiæ tridentate.

Long. 3, lat. $1\frac{1}{2}$ lines.

167. *HETERONYX SUBVITTATUS*, n.sp.

Oblong-ovate, pale chestnut, sub-nitid, very minutely and densely punctate, and covered with a short cinereous pubescence. Head rather roughly punctate, the clypeus emarginate in front showing the labrum, the clypeal suture indistinct. Thorax rather transverse, truncate in front, rounded a little on the sides, wider behind than in front, the posterior angles rounded, a slight depression on the basal half of the median line and a small fovea about the middle of each side. Elytra about the width of the thorax and more than twice the length, completely covering the pygidium, extremely minutely punctate, with eight or more very faint indistinct vittæ of a lighter colour on each elytron. Beneath villose, nitid, the anterior tibiæ tridentate.

Long. 3, lat. $1\frac{1}{2}$ lines.

168. *HETERONYX PARVULUS*, n.sp.

Oblong, reddish-chestnut, nitid, finely and densely punctate, with a short ashen pubescence. Head emarginate in the middle of the clypeus; the clypeal suture deeply marked and arcuate.

Thorax a little wider than long, rounded on the sides, a little wider at the base than the apex, the posterior angles rounded, with a small fovea near the middle of each side. Elytra of the width of the thorax, about three times the length, parallel-sided, very finely punctate, but neither so minutely nor densely as in *H. subvittatus*. Anterior tibiæ strongly tridentate.

Long. $2\frac{1}{2}$, lat. 1 line.

169. *SCITALA PALLIDULA*, n.sp.

Sub-ovate, pale reddish-brown, sub-opaque. Head slightly convex, extremely minutely punctate, the clypeal suture deeply impressed and bisinuate, the clypeus nearly square and somewhat excavated and reflexed in front, with a very light emargination. Thorax more than twice wider than long, the anterior angles acute and prominent, the sides widened to near the base, the posterior angles rounded; the puncturation almost invisible, the median line obsoletely impressed. Scutellum elongate-triangular. Elytra very pale testaceous, sub-nitid, sub-oval, about three times the length of the thorax, and finely punctate, with a callus at the humeral angle, and a sutural and four geminate striæ on each elytron. Legs moderately robust, anterior tibiæ tridentate.

Long. 4, lat. 2 lines.

This should perhaps form a new genus.

170. *RHOPÆA CASTANEIPENNIS*, n.sp.

Elongate-ovate, piceous or piceous-red, nitid. Head roughly punctate, the clypeal suture straight in the middle and directed obliquely upwards on each side to the eye, clypeus not wider than the head and nearly as long, a little reflected and nearly truncate in front, the antennæ 10-jointed, the second and third joints equal, the fourth shortly lamellate, the other six largely lamellate, the lamellæ long, curved, and of a pale yellow. Thorax twice as wide as long, truncate in front, rounded on the sides, wider at the base than apex, sub-truncate at the base, moderately finely

and densely punctate—each puncture with a very minute whitish scale and with the median line slightly impressed in the middle, and a small fovea near each side. Scutellum transverse, rounded behind. Elytra slightly wider than the thorax and three times the length, widening a little towards the apex, of a chestnut-red colour, largely and irregularly punctate each puncture with a very minute whitish scale, with a sutural stria, and three almost obsolete raised lines on each elytron. Legs rather slender, the anterior tibiæ tridentate.

Long. 8, lat. 4 lines.

171. *LEPIDIOTA SQUAMULATA*, Waterh.

Mast. Cat. Col. Sp. 2407.

If I am right in my determination of this species, it is not uncommon on all the east coast of New Holland north of Brisbane. Mr. Waterhouse describes it from Swan River. I have received only one specimen from King's Sound.

Sub-Family RUTELIDES.

172. *CALLOODES GREYANUS*, White.

Mast. Cat. Col. Sp. 2443.

Sub-Family DYNASTIDES.

173. *HETERONYCHUS LUCIDUS*, n.sp.

Broadly ovate, convex, piceous-red, very nitid. Head small, densely punctate, the clypeus rather acutely angled in a lateral direction in front of the eyes, the sides narrowing in a concave sweep to the apex, which is narrowly and slightly emarginate, and minutely bidentate on the edge, a transverse ridge between the eyes. Thorax narrow in front, very rounded on the sides, broad at the base, and thinly and finely punctate, with a small tubercle in the middle of the anterior margin. Scutellum.

transverse, rounded behind and smooth, with a transverse depression at the base. Elytra a little broader than the thorax and nearly twice the length, with a strong stria on each side of the suture, the rest punctate, the punctures large and in rather irregular rows, growing more crowded towards the sides,—excepting a space near the suture, widest at the base, which is almost impunctate. The legs are short, strong, spinous, and ciliated, the anterior tibiæ broadly and flatly tridentate.

Long. 8, lat. 4 lines.

In an insect which I take to be the female of this species, the occiput is smooth, and there is no trace of a tubercle at the apex of the thorax.

174. *ISODON PICIPENNIS*, n.sp.

Oblong-ovate, black, nitid, elytra piceous-red. Head small, transverse, clypeus like the last species, but the apex more truncate. Thorax transverse, narrowed at the apex, large, rounded on the sides, much wider at the base than the apex, largely and roundly excavated in the middle on the anterior half, with a short conical tubercle on the anterior margin, and punctate only on the anterior and lateral margins. Scutellum as in the last species. Elytra the width of the thorax and one and a-half times the length, punctate and marked as in the preceding, but the punctures coarser and more rugose, and the smooth space on each side of the sutural stria of less width. The legs strong, the anterior tibiæ with three strong, flat, and obtuse teeth.

Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ lines.

175. *CHEIROPLATYS OCCIDENTALIS*, n.sp.

Ovate, black, nitid. Head small, transverse, rugosely punctate, the clypeus finely punctate, narrowed in a straight line towards the apex which is sub-truncate, the clypeal suture straight and ridged. Thorax narrow in front, much rounded on the sides,

and broad behind, considerably wider than long, and minutely but not densely punctate, with a deep excavation of a rounded triangular form occupying the anterior two-thirds of the middle of the thorax, and a blunt conical tubercle in front. Elytra about the width of the thorax and twice the length, strongly striate on each side of the suture, with about twelve rows of punctures disposed in more or less irregular oblique rows on each elytron, some of the rows striate, the punctures rather small and distant on the first two rows, the others very coarsely punctate. Beneath piceous, reddish hairy; legs reddish, the anterior tibiæ bluntly tridentate.

Long. $6\frac{1}{2}$, lat. $3\frac{1}{2}$ lines.

176. CAVONUS TURRITUS, n.sp.

Broadly ovate, convex, reddish-chestnut, nitid. Head small, transverse, depressed and thinly punctate, the clypeus narrower than the head, and nearly at right angles to it, with the sides and apex rounded; the whole surrounded by a strong ridge, of which the clypeal suture forms the base. Thorax very transverse, the sides very prominently bulged out in the middle, the whole disk very deeply excavated, with a small tubercle on the anterior edge of the excavation, and a large turret-like elevation on each side of the excavation, terminating in a broad flattened slightly bifid summit, the interior of the excavation is smooth and densely villose, the turrits are coarsely punctate and nearly black, and a strong curved ridge crosses the front of the lower part of them, the end of which forms a tooth on the inner edge. Scutellum large, triangular, rounded behind, and finely rugose. Elytra as wide as the thorax and one and a-half times the length, largely but not deeply rugosely punctate in irregular rows, a strong punctured stria on each side of the suture; beneath densely covered with long hair, the legs short and strong, the anterior tibiæ tridentate, the posterior very large.

Long. 9, lat. 5 lines.

177. *ORYCTES BARBAROSSA*, Fab.

Mast. Cat. Col. Sp. 2500.

The collection contains two fine specimens of this insect, the first I have ever seen.

178. *CRYPTODUS FAIRMAIREI*, n.sp.

I name the present species after Mr. Fairmaire, who has written the most complete monograph on this genus I have seen. It has a considerable resemblance to *C. variolosus*, White, from King George's Sound, but differs in being of slightly more elongate form, in being of a blacker colour, in the minute tubercles on the forehead, in the thorax less transverse, more densely punctate, and more distinctly depressed on the median line, in the elytra more square at the humeral angles, more parallel-sided, and more elongate, with the variolose punctures more crowded and less deep, with the costæ less distinct, and the small punctures spread throughout much smaller and denser.

Sub-Family CETONIIDES.

179. *HEMIPHARIS FROGGATTI*, n.sp.

Of more elongate form than *H. insularis*. Entirely golden green. Head punctate. Thorax smooth, slightly scratched and punctate on the lateral margin. Elytra also smooth, a little transversely scratched at apex and sides, narrowing to the apex more than in *H. insularis*. Pygidium transversely scratched. The undersurface almost without puncturation.

Long. $11\frac{1}{2}$, lat. 5 lines.

180. *DILCHROSIS TORRIDA*, Jans.

Mast. Cat. Col. Sp. 2549.

181. *POLYSTIGMA VITTICOLLE*, n.sp.

The genus *Polystigma* is one of the many into which Dr. Kraatz has cut up the old genus *Schizorhina*. It includes the *S. punctata*

of Donovan, a species which, in general appearance and in the lanceolate form of the sternum, comes nearest to the present insect. I therefore place it in the same genus.

Elongate ovate, yellow, nitid, scarcely visibly punctate. Head with a semi-circular black mark on the occiput. Thorax longer than wide, and widest at the base, with two black vittæ extending from the black mark on the occiput to the base of the thorax, gradually widening from apex to base. Elytra a little wider than the thorax at the base; suddenly narrowed on the sides behind the humeral angles, very faintly punctate and scratched, the suture smooth, raised and of a pale reddish colour, with a small round spot at the humeral angles, a triangular one on each side of the scutellum, a broad curved fascia behind the middle not reaching the sides, and a moderately large round spot near the apex, black. Mesosternum of broad lanceolate form, blunt at the apex and slightly curved inwards, the abdominal segments narrowly margined with brown at the base, the pygidium transverse and transversely scratched, the anterior tibiæ feebly tridentate, the upper one very minute.

Long. 5, lat $2\frac{1}{2}$ lines.

182. GLYCYPHANA BRUNNIPES, Kirby.

Mast. Cat. Col. Sp. 2616.

CATALOGUE OF THE KNOWN COLEOPTERA OF NEW
GUINEA, INCLUDING THE ISLANDS OF NEW
IRELAND, NEW BRITAIN, DUKE OF YORK, ARU,
MYSOL, WAIGIOU, SALWATTY, KEY, AND JOBIE.

BY GEORGE MASTERS.

PART II.

Family CURCULIONIDÆ.

Sub-Family BRACHYDERIDES.

OTTISTIRA. Pascoe.

- 969 BICORNIS, Pascoe, Journ. Linn. Soc. XI. 1872, p. 441. t. 10,
f. 6. Dorey.
970 BISPINOSA, Pascoe, l.c. p. 441. New Guinea.
971 FASCIATA, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 184. Fly River.
972 IRRORATA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 202.
Salwatty.
973 MIXTA, Pascoe, l.c. p. 203. Aru.

LAODICE. Gemminger.

- 974 CONSUETUS, Chev. Le Nat. II. 1880, p. 333. New Guinea.
975 FUNEBRIS, Chev. Bull. Soc. Ent. Fr. (5) V. 1880, p. ciii.
Fly River, Yule Island, &c.

RHINOSCAPHA. Montrouzier.

- 976 ALBERTISI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 204.
Sorong, New Guinea.
977 ALBIPENNIS, Pascoe, l.c. p. 205. Yule Island.
978 ALMA, Pascoe, Journ. Linn. Soc. XII. 1873, p. 3, Aru.

- 926 CATALOGUE OF THE KNOWN COLEOPTERA OF NEW GUINEA,
- 979 *ANGUSTA*, Blanch. Voy. Pole Sud, IV. 1853, p. 218, t. 13,
f. 14. Aru.
- 980 *ARROGANS*, Boisd. Voy. Astrol. II. 1835, p. 358, t. 7, f. 8.
New Guinea.
- 981 *AZUREIPES*, Blanch. Voy. Pole Sud, IV. 1853, p. 219, t. 13,
f. 15.
- zonata*, Blanch. l.c. p. 219, t. 13, f. 16. New Guinea.
- 982 *BASILICA*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 1. Dorey.
- 983 *BECCARII*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 206.
Ramoï, New Guinea.
- 984 *BIFASCIATA*, Chev. Le Nat. III. 1881, p. 348; Bull. Soc.
Ent. Fr. (6) I. p. LXIX. New Guinea.
- 985 *DORLÆ*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 206, t. 1,
f. 11. Fly River.
- 986 *FABRICII*, Thoms. Arch. Ent. I. 1857, p. 443, t. 17, f. 5.
Aru.
- 987 *GENEROSA*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 204.
Dorey.
- 988 *MACLAYI*, MacL. Proc. Linn. Soc. N.S.W. IX. 1884, p. 705
MacLay Coast.
- 989 *MILIARIS*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 5. Mysol.
- 990 *OPALESCENS*, Pascoe, l.c. p. 3. Waigiou, Mysol, Dorey.
- 991 *PERVERSA*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 205.
Dorey.
- 992 *PLAGIATA*, Blanch. Voy. Pole Sud, IV. p. 216, t. 13, f. 12.
Aru.
- 993 *SCHMELTZI*, Fairm. Pet. Nouv. II. 1877, p. 185; Journ.
Mus. Godeffr. XIV. 1879, p. 112. Duke of York Island.
- 994 *SORDIDA*, Blanch. Voy. Pole Sud, IV. 1853, p. 217. Aru.
- 995 *STOLIFERA*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 4.
Waigiou.
- 996 *STRIATOPUNCTATA*, Guér. Voy. Coquille, II. 2, 1830, p. 113,
t. 6, f. 2; Boisd. Voy. Astrol. II. 1835, p. 260.
New Guinea.
- 997 *VIRIDULA*, Kirsch, MT. Mus. Dresd. Heft II. 1887, p. 147.
New Guinea.

PACHYRHYNCHUS. Germar.

- 998 BIPLAGIATUS, Guér. Rev. Zool. 1841, p. 216; Bates, Proc. Zool. Soc. 1877, p. 154, t. 24, f. 3. Duke of York Island.
- 999 DECEMPUSTULATUS, Gestro, Ann. Mus. Genov. XIV. 1879, p. 562. New Guinea.
- 1000 PLUTUS, Ober. Bull. Soc. Ent. Fr. (6) III. 1883, p. xxv. New Britain.
- 1001 QUADRIPUSTULATUS, Gestro, Ann. Mus. Genov. VII. 1875, p. 1008. Geelvink Bay, New Guinea.
- 1002 VERRUCATUS, Bates, Proc. Zool. Soc. 1877, p. 154, t. 25, f. 3. Duke of York Island.

EPISOMELLUS. Kirsch.

- 1003 PAPUANUS, Kirsch, MT. Mus. Dresd. Heft II. 1877, p. 151. New Guinea.

HYPOMECE. Schönherr.

- 1004 INFLATUS, Chev. Pet. Nouv. II. 1877, p. 189. New Guinea.

EUPHOLUS. Guérin.

- 1005 ADMIRANDUS, Kirsch, MT. Mus. Dresd. Heft II. 1877, p. 150. New Guinea.
- 1006 ALTERNANS, Kirsch, l.c. p. 149. New Guinea.
- 1007 AMALIZÆ, Gestro, Ann. Mus. Genov. VII. 1875, p. 1004. Ramoi, New Guinea.
- 1008 ARFAKI, Chev. Le Nat. II. 1880, p. 333. New Guinea.
- 1009 ARFAKIANUS, Gestro, Ann. Mus. Genov. VII. 1875, p. 1003. Hatam, New Guinea.
- 1010 AZUREUS, Macl. Proc. Linn. Soc. N.S.W. IX. 1884, p. 704. Maclay Coast.
- 1011 BECCARII, Gestro, Ann. Mus. Genov. VII. 1875, p. 1005. Dorey.
- 1012 BENNETTII, Gestro, l.c. VIII. 1876, p. 387, fig. S. New Guinea.
- 1013 BROWNII, Bates, Proc. Zool. Soc. 1877, p. 155, t. 25, f. 2. Duke of York Island.

- 1014 BRUIJNII, Gestro, Ann. Mus. Genov. VII. 1875, p. 1007.
Hatam, New Guinea.
- 1015 CUVIERII, Guér. Voy. Coquille, II. 2, p. 118, t. 6, f. 4;
Mon. p. 4, t. 97, f. 4; Boisd. Voy. Astrol. II. 1835, p. 363.
New Guinea.
- 1016 GEOFFROYII, Guér. l.c. p. 115, t. 6, f. 3; Mon. p. 3, t. 97, f. 2.
mirabilis, Boisd. Voy. Astrol. II. p. 364. New Guinea.
- 1017 GUERINII, Chev. Bull. Soc. Ent. Fr. (5) V. 1880, p. xvi.
New Guinea.
- 1018 LATREILLEI, Kirsch, MT. Mus. Dresd. Heft II. 1877,
p. 148. New Guinea.
- 1019 LINNEI, Thoms. Synops. Arch. Ent. I. 1857, p. 442, t. 17,
f. 4. Aru.
- 1020 MAGNIFICUS, Kirsch, MT. Mus. Dresd. Heft II. 1877,
p. 148. New Guinea.
- 1021 PETITII, Guér. Rev. Zool. 1841, p. 216; Mon. t. 97, f. 1;
Blanch. Voy. Pole Sud, IV. 1853, p. 214, t. 13, f. 10.
New Guinea.
- 1022 QUADRIMACULATUS, Kirsch, MT. Mus. Dresd. Heft II.
1887, p. 149. New Guinea.
- 1023 RAFFRAYI, Chev. Bull. Soc. Ent. Fr. (5) V. 1880, p. xvi.
New Guinea.
- 1024 SCHONHERRI, Guér. Voy. Coquille, II. 2, p. 116; Mon. t. 96,
f. 1. New Guinea.
- 1025 TUPINIERI, Guér. Voy. Favorite, Mag. Zool. p. 65, t. 233,
f. 1; Mon. p. 4, t. 97, f. 3. New Guinea.

APOCYRTUS. Erichson.

- 1026 IMPRESSUS, Chev. Le Nat. I. 1879, p. 133. Dorey.
- 1027 MARGARITA, Oliv. Ent. V. 83, p. 374, t. 19, f. 238.
aeneus, Fabr. Syst. El. II. p. 508; Boisd. Voy. Astrol. II.
p. 347. New Guinea.
- 1028 NITIDULUS, Pascoe, Journ. Linn. Soc. XI. 1873, p. 157.
Waigiou.

- 1029 ROELOFSI, Ancey, Le Nat. II. 1880, p. 205. New Guinea.
 1030 VIRIDIS, Chev. Le Nat. I. 1879, p. 134. Dorey.

Sub-Family OTIORHYNCHIDES.

SITEUTES. Schönherr.

- 1031 CÆRULEATUS, Pascoe, Cist. Ent. II. 1881, p. 594. Yule Island.
 1032 GLABRATUS, Pascoe, Journ. Linn. Soc. XI. 1873, p. 157. Fly River.
 1033 GRANIGER, Pascoe, Cist. Ent. II. 1881, p. 593. Yule Island.

PHRAOTES. Pascoe.

- 1034 TUBERCULATUS, Pascoe, Ann. Mus. Genov (2) II. 1885, p. 209, t. 1, f. 4. Fly River.

COPTORHYNCHUS. Guérin.

- 1035 ALBIDOPLAGIATUS, Fairm. (Sphæropterus) Ann. Ent. Belg. XXVII. 2, 1883, p. 35. Duke of York Island and New Britain.
 1036 ALBOLINEATUS, Guér. (Sphæropterus) Voy. Coquille, II. p. 123; Bohem. Schönh. Gen. Curc. VII. 1, p. 234. *luctuosus*, Boisd. Voy. Astrol. II. p. 396; d'Urville, Dej. Cat. 3 ed. p. 294; Guér. Rev. Zool. 1841, p. 192. Hatam, Andai, Dorey, &c.
 1037 BITUBERCULATUS, Kirsch, (Sphæropterus) MT. Mus. Dresd. Heft II. p. 152. Jobi.
 1038 BOMBICOLLIS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886, p. 185. Fly River.
 1039 BOMBYLIUS, Guér. (Sphæropterus) Rev. Zool. 1841, p. 192. New Guinea.
 1040 CAUDATUS, Guér. (Sphæropterus) l.c. p. 192; Blanch. Voy. Pole Sud, IV. p. 228, t. 15, f. 16. New Guinea.

- 1041 CRASSIROSTRIS, Pascoe, Ann. Mus. Genov. (2) II. 1885,
p. 213. Sorong, Salwatty.
- 1042 GUTTATUS, Pascoe, l.c. p. 214, t. 2, f. 4. New Guinea.
- 1043 GUTTIGER, Blanch. (Sphæropterus) Voy. Pole Sud, IV. p. 222,
t. 15, f. 9. New Guinea.
- 1044 IMMITIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 212.
Hatam, Korido.
- 1045 LEUCOSTICTUS, Pascoe, l.c. p. 214. Sorong, New Guinea.
- 1046 LIGATUS, Pascoe, l.c. p. 212. Dorey, Ramoi.
- 1047 MÆRENS, Pascoe, l.c. p. 212. Korido, New Guinea.
- 1048 NUDUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 185. Fly River.
- 1049 QUINARIUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 214.
Geelvink Bay, New Guinea.
- 1050 14-MACULATUS, Chev. Pet. Nouv. II. 1877, p. 189.
New Guinea.
- 1051 SERVILIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 211.
Fly River.
- 1052 SPECULATUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 185. Fly River.
- 1053 TESSELLATUS, Blanch. (Sphæropterus) Voy. Pole Sud, IV.
p. 223, t. 15, f. 10. Aru.

CELEUTHETES. Schönherr.

- 1054 BICRISTATUS, Montrouz. Ann. Soc. Agr. Lyon, VII. 1857,
p. 49 ; Lacord. Gen. Col. VI. 1863, p. 150, note 2 ;
Macleay, Proc. Linn. Soc. N.S.W. IX. 1884, p. 715.
Macley Coast, &c., New Guinea.
- 1055 CINERASCENS, Blanch. Voy. Pole Sud, IV. p. 231, t. 15, f. 6.
Aru.
- 1056 ECHINATUS, Fab. (Curculio) Syst. El. II. p. 525 ; Pascoe,
Ann. Mus. Genov. (2) II. 1885, p. 209.
Dorey, Salwatty, Aru, &c.
- 1057 SETIGER, Pascoe, l.c. p. 210. Yule Island.

APIROCALUS. Pascoe.

- 1058 GESTROI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 209,
t. 1, f. 3. Yule Island.

PSOMELES. Guérin.

- 1059 PLAGIATUS, Blanch. Voy. Pole Sud, IV. p. 229, t. 15, f. 18.
New Guinea.

GYNARIA. Pascoe.

- 1060 NASUTA, Pascoe, Ann. Nat. Hist. (5) XII. 1883, p. 89.
Aru.

ELYTROGONUS. Guérin.

- 1061 SUBANGULATUS, Fairm. Ann. Ent. Belg. XXVII. (2), 1883,
p. 34. Duke of York Island.

TRIGONOPS. Guérin.

- 1062 VITICOLLIS, Fairm. Ann. Ent. Belg. XXVII. (2) 1883,
p. 34. Duke of York Island.

Sub-Family LEPTOPSIDES.

CATASTYGNUS. Pascoe.

- 1063 LIMBATUS, Pascoe, Ann. Nat. Hist. 1871, p. 94; Fairm.
Ann. Ent. Belg. XXVII. 1883, p. 35.
Duke of York Island.

Sub-Family RHYPAROSOMIDES.

ERGIAS. Pascoe.

- 1064 TURBATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 219.
Fly River.

MIOTUS. Pascoe.

- 1065 STYPHLOIDES, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 220.
Hatam, New Guinea.

Sub-Family ATERPIDES.

DEXAGIA. Pascoe.

- 1066 SUPERCILIARIS, Pascoe, Journ. Linn. Soc. XI. 1873, p. 166,
t. 7, f. 2 Aru.

HYPERMETRA. Pascoe.

- 1067 ANALIS, Pascoe, Journ. Linn. Soc. XI. 1873, p. 157, t. 9, f. 5.
Mysol.

RHINARIA. Kirby.

- 1068 VARIEGATA, Boisd. Voy. Astrol. II. p. 411, t. 7, f. 10.
New Guinea.

Sub-Family CLEONIDES.

LIXUS. Fabricius.

- 1069 AUSTRALIS, Boisd. Voy. Astrol. II. 1835, p. 404.
New Guinea.
1070 CONFORMIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 223.
Hatam, New Guinea.
1071 DUPONTI, Schönh. Gen. Curc. VII. 1, p. 478.
farinosus, Boisd. Voy. Astrol. II. 1835, p. 406.
New Guinea.
1072 MONTICOLA, Kirsch, Mus. Dresd. Heft II. 1877, p. 152.
New Guinea.
1073 RITSEMÆ, Pascoe, Notes Leyd. Mus. V. 1883, p. 87.
Andai, New Guinea.

Sub-Family HYLOBIIDES.

PÆPALOSOMUS. Schönherr.

- 1074 DEALBATUS, Boisd. Voy. Astrol. II. 1835, p. 425; Lacord
Gen. Col. VI. 1863, p. 445, note 2.
New Guinea; Duke of York Island.
1075 ZONATUS, Pascoe, Journ. Linn. Soc. XI. 1873, p. 168.
New Guinea; Aru, &c.

HYLOBIUS. Germar.

- 1076 ACLEEOIDES, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 225.
Korido, New Guinea.
- 1077 CRASSIROSTRIS, Pascoe. l.c. p. 224. Fly River.

ACLEES. Schönherr.

- 1078 GYLLENHALII, Pascoe, Journ. Linn. Soc. XI. 1873, p. 172.
New Guinea ; Waigiou.
- 1079 POROSUS, Pascoe, l.c. p. 172. New Guinea ; Aru, &c.

NIPHADES. Pascoe.

- 1080 COSTATUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 174.
Aru.

ORTHORHINUS. Schönherr.

- 1081 BRACHYPUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 226.
t. 1, f. 5. Fly River.
- 1082 CYLINDRIROSTRIS, Fabr. Syst. Ent. p. 137. Yule Island.
- 1083 EUCHROMUS, Fairm. Ann. Ent. Belg. XXVII. 1883 (2),
p. 36. Duke of York Island.
- 1084 PATRUELI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 225.
New Guinea ; Aru, &c.
- 1085 PERVERSUS, Pascoe, l.c. p. 226.
Fly River, Waigiou, Aru, &c.

Sub-Family ERIRHINIDES.

CTYLINDRA. Pascoe.

- 1086 RHOMBOIDEA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 227.
Fly River.

CENCHRENA. Pascoe.

- 1087 FASCIATA, Pascoe, Journ. Linn. Soc. XII. 1874, p. 24,
t. 3, f. 9. Waigiou ; Aru.

Sub-Family BELIDES.

BELUS. Schönherr.

- 1088 INORNATUS, Pascoe, Journ. Linn. Soc. XII. 1874, p. 27.
Mysol.
1089 WALLACEI, Pascoe, Journ. Linn. Soc. XII. 1874, p. 26.
New Guinea.

Sub-Family EURHYNCHIDES.

EURHYNCHUS. Schönherr.

- 1090 BISPINOSUS, Boisd. Voy. Astrol. II. p. 310.
Fly River, Dorey, Aru, &c.

Sub-Family ATTELABIDES.

EUOPS. Schönherr.

- 1091 CELESTINA, Pascoe, Journ. Linn. Soc. XII. 1874, p. 27.
Dorey.
1092 CUPREOSPLENDENS, Macleay, Proc. Linn. Soc. N.S.W. (2) I.
1886, p. 186. Fly River.
1093 DIVISA, Pascoe, Journ. Linn. Soc. XII. 1874, p. 29.
Dorey ; Mysol.
1094 JEKELLI, Pascoe, l.c. p. 29.
Aru ; Dorey ; Salvatty ; Waigiou.
1095 TRIGEMMATA, Pascoe, l.c. p. 28. Dorey.

Sub-Family RHINOMACERIDES.

AULETES. Schönherr.

- 1096 PICTICORNIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 234.
Andai, New Guinea.

Sub-Family BALANINIDES.

BALANINUS. Germar.

- 1097 C-ALBUM, Fabr. Suppl. Syst. Ent. p. 170.
Waigiou ; Fly River.

- 1098 *GALBULA*, Pascoe, Ann. Nat. Hist. (5) XII. 1883, p. 92.
Dorey.
1099 *LUCTUOSUS*, Pascoe, l.c. p. 91. Dorey.
1100 *TERSUS*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 235.
Fly River.

Sub-Family ANTHONOMIDES.

NISEIDA. Pascoe.

- 1101 *VIRGINEA*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 236.
Aru.

Sub-Family LÆMOSACCIDES.

LÆMOSACCUS. Schönherr.

- 1102 *INSULARIS*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 238.
Yule Island.
1103 *LONGICEPS*, Pascoe, Ann. Nat. Hist. XII. 1873, p. 281.
New Guinea; Aru.
1104 *PETULANS*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 238.
Fly River.

Sub-Family ALCIDIDES.

ALCIDES. Schönherr.

- 1105 *AUSTRALIS*, Boisd. Voy. Astrol. II. 1835, p. 423, t. 7, f. 78;
Blanch. Voy. Pole Sud, p. 244, t. 14, f. 18. New Guinea.
1106 *ALBOLITURATUS*, Blanch. Voy. Pole Sud, p. 245, t. 14, f. 19.
Aru.
1107 *ATROCRETOSUS*, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 37.
Duke of York Island.
1108 *BREVICOLLIS*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 243.
New Guinea; Mysol.
1109 *DISPAR*, Chev. Le Nat. II. 1880, p. 333. New Guinea.
1110 *ELEGANS*, Guér. Voy. Coquille, 1830, II. p. 124, t. 6, f. 6;
Boisd. Voy. Astrol. II. p. 421. Fly River, &c.
1111 *EXORNATUS*, Chev. Le Nat. II. 1880, p. 333. New Guinea.

- 936 CATALOGUE OF THE KNOWN COLEOPTERA OF NEW GUINEA,
- 1112 GESTROI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 242.
Fly River.
- 1113 INDIGACEUS, Pascoe, Ann. Nat. Hist. (5) X. 1882, p. 447.
Mysol ; Fly River.
- 1114 MAGISTER, Pascoe, Journ. Linn. Soc. XI. 1874, p. 181, t. 9,
f. 9. Fly River.
- 1115 NOTATUS, Blanch. Voy. Pole Sud, IV. 1853, p. 243, t. 14,
f. 17. Aru.
- 1116 PRÆUSTUS, Guér. Voy. Coquille, II. p. 123 ; Boisd. Voy.
Astrol. II. 1835, p. 24. Aru ; Fly River, &c.
- 1117 PROFLUENS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 239.
Dorey, Ramoi.
- 1118 PUSILLUS, Pascoe, l.c. p. 243. Fly River, Katow.
- 1119 ROSTRATUS, Pascoe, l.c. p. 241. Fly River.

Sub-Family MENEMACHIDES.

ACINEMIS. Lacordaire.

- 1120 ANGUSTULA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 247.
Aru.
- 1121 LATICOLLIS, Pascoe, l.c. p. 245. Yule Island ; Fly River.
- 1122 LINEA, Pascoe, l.c. p. 245. Yule Island ; Aru.
- 1123 LOBICOLLIS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 188. Fly River.
- 1124 LONGIROSTRIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 244.
Fly River, Dorey, &c.
- 1125 MERIONES, Pascoe, Journ. Linn. Soc. XI. 1874, p. 462, t. 10,
f. 5. Yule Island.
- 1126 ORNATA, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 187. Fly River.
- 1127 SPILONOTA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 247.
Yule Island.

Sub-Family ITHYPORIDES.

POLYZELUS. Pascoe.

- 1128 CRASSICOLLIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 248.
Fly River.

PANTOXYSTUS. Pascoe.

- 1129 CYANEUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 189. Fly River.
- 1130 RUBRICOLLIS, Boisd. Voy. Astrol. II. p. 442. Fly River, &c.

Sub-Family CRYPTORHYNCHIDES.

MAGARIS. Pascoe.

- 1131 VARIABILIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 250.
Fly River.

IMATHIA. Pascoe.

- 1132 BELLA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 251.
Hatam, New Guinea.
- 1133 UNICOLOR, Pascoe l.c. p. 251. Hatam, New Guinea.

DYSTROPICUS. Pascoe.

- 1134 SQUALIDUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 252.
Yule Island.

THEOCLIA. Pascoe.

- 1135 BIFASCIATA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 253.
Yule Island.

ARYPTÆUS. Pascoe.

- 1136 TRINARIUS, Pascoe, Ann. Nat. Hist. (5) X. 1882, p. 453.
Dorey.

ASYTESTA. Pascoe.

- 1137 DORIÆ, Kirsch, Ann. Mus. Genov. XIV. 1879, p. 19.
New Guinea.
- 1138 BIVIRGATA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 259.
Hatam, New Guinea.

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- 1139 GAZELLA, Oliv. (Rhynchænus) Ent. N. 83, p. 175, t. 22,
f. 303. New Guinea; Aru.

DIATHRYPTUS. Pascoe.

- 1140 ASPER, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 256.
Fly River.

SALCUS. Pascoe.

- 1141 GRANULATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 256.
Yule Island.

ANCHITHYRUS. Pascoe.

- 1142 GESTROI, Pascoe, l.c. p. 258. Fly River.

- 1143 OBESUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 258.
Yule Island.

PTOLYCUS. Pascoe.

- 1144 CARINIROSTRIS, Pascoe, Ann. Mus. Genov. (2) II. 1885,
p. 259. Yule Island, &c.

- 1145 FULIGINEUS, Pascoe, l.c. p. 259. Fly River.

- 1146 TRACHYPTERUS, Pascoe, l.c. p. 258. Fly River.

ECTATORRHINUS. Lacordaire.

- 1147 GODEFFROYII, Fairm. Le Nat. III. 1881, p. 389.
Duke of York Island.

CALOBODES. Schönherr.

- 1148 MAGICUS, Gerstäck. Stett. Zeit. 1860, p. 389; Lacord. Gen.
Col. VII. p. 59, note. New Guinea.

CLEOGONUS. Schönherr.

- 1149 RUBRICOLLIS, Boisd. Voy. Astrol. II. 1835, p. 442.
New Guinea.

- 1150 RUBRIPENNIS, Chev. Le Nat. III. 1881, p. 495.
New Guinea.

HYBICUS. Pascoe.

- 1151 ROTUNDATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 260.
Yule Island.

CHIROGONIA. Pascoe.

- 1152 OPATROIDES, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 260.
Fly River.

ANABALLUS. Blanchard.

- 1153 CRASSUS, Fairm. Ann. Ent. Belg. XXVII. 1883 p. 39.
New Britain.
- 1154 RUBIGINEUS, Fairm. l.c. p. 39. Duke of York Island.
- 1155 SCABROSUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 261.
Yule Island.

CAMPTORHINUS. Schönherr.

- 1156 UNIFORMIS, Fairm. Ann. Ent. Belg. XXVII. 1883 p. 38.
New Britain.

POROPTERUS. Schönherr.

- 1157 ARCHAICUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 263.
Aru.
- 1158 CONCRETUS, Pascoe, l.c. p. 262. Fly River.
- 1159 ECHIMYS, Pascoe, l.c. p. 262. Yule Island.
- 1160 GEMMIFER, Pascoe, l.c. p. 261. Fly River.
- 1161 GLANIS, Pascoe, l.c. p. 261. Fly River.
- 1162 MITRATUS, Pascoe, l.c. p. 262. Fly River.
- 1163 ORDINARIUS, Pascoe, l.c. p. 264. Faor Island, New Guinea.
- 1164 PERTINAX, Pascoe, l.c. p. 263. Fly River.
- 1165 SCIUREUS, Pascoe, l.c. p. 263. Yule Island.
- 1166 SOCIUS, Pascoe, l.c. p. 262. Yule Island.
- 1167 VICARIUS, Pascoe, l.c. p. 263. Fly River.

APORONOTUS. Pascoe.

- 1168 SIMPLEX, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 264.
Yule Island.

MORMOSINTES. Pascoe.

- 1169 NODOSUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 265.
Fly River.

EREBACES. Pascoe.

- 1170 ATER, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 265.
Korido, New Guinea.
- 1171 BECCARI, Pascoe, l.c. p. 266. Korido, New Guinea.

CLEOBIS. Pascoe.

- 1172 GEMMATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 266.
Fly River; Yule Island.

BEROSIRIS.

- 1173 CALIDRIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 267.
Andai, Fly River, &c.
1174 INCERTUS, Pascoe, l.c. p. 268. Aru.
1175 TRISTIS, Pascoe, l.c. p. 267. Yule Island.

BEROSICUS. Pascoe.

- 1176 PERSONA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 269.
Fly River.

PERISSOPS. Pascoe.

- 1177 ILIACUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 194.
New Guinea; Mysol, &c.
1178 PAVONINUS, Chev. Pet. Nouv. II. 1877, p. 189.
New Guinea.

PLATYTENES. Pascoe.

- 1179 VARIUS, Pascoe, Journ. Linn. Soc. X. 1870, p. 467,
t. 18, f. 1. New Guinea; Aru, &c.

DIATASSA. Pascoe.

- 1180 PHALERATA, Pascoe, Journ. Linn. Soc. XI. 1871, p. 193,
t. 9, f. 2. Mysol.
1181 PICTA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 269.
Fly River.

NECHYRUS. Pascoe.

- 1182 DECISUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 271.
Fly River.
1183 GENICULATUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 205.
Mysol.
1184 INDIGNUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 270.
Yule Island.

1185 PUNCTICOLLIS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 204.
Aru.

1186 RESTRICTUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 270.
Aru.

SYRICHIVS. Pascoe.

1187 RUSTICUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 271.
Yule Island.

1188 SERVULUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 208.
Dorey.

TYRTÆOSUS.

1189 AVERSANDUS, Pascoe, Ann. Mus. Genov. (2) II. 1885,
p. 272. Fly River.

1190 DISCREPANS, Pascoe, l.c. p. 272. Yule Island.

GYGÆUS. Pascoe.

1191 PRODIGUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 273.
Fly River.

CYAMOBOLUS. Schönherr.

1192 FUNEREUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 274.
Andai, &c., New Guinea.

1193 LUDIOSUS, Pascoe, l.c. p. 274. Fly River.

1194 MIMICUS, Pascoe, l.c. p. 273. Fly River.

1195 TRIVITTATUS, Pascoe, l.c. p. 274. Andai, New Guinea.

DYSOPIRHINUS. Roelofs.

1196 GESTROI, Roelofs, CR. Ent. Belg. XXIII. 1880, p. XLIV.
New Guinea.

EUDYASMUS. Pascoe.

1197 ALBERTISI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 275.
Fly River.

HYPARINUS. Pascoe.

1198 DISPAR, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 276.
Fly River.

EUTHYRHINUS. Schönherr.

1199 BREVISPINOSUS, Fairm. Ann. Ent. Belg. XXVII. 1883,
p. 37. Duke of York Island.

942 CATALOGUE OF THE KNOWN COLEOPTERA OF NEW GUINEA,

1200 DORSALIS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 189. Fly River.

1201 FRONTALIS, Kirsch, Mus. Dresd. Heft II. 1877, p. 152.
New Guinea.

1202 ICONICUS, Pascoe, Journ. Linn. Soc. XI. 1872, p. 477.
Mysol.

1203 IRRORATUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 189. Fly River.

1204 TESSELLATUS, Blanch. Voy. Pole Sud, IV. p. 249, t. 14, f. 6.
Fly River, Dorey, &c.

ORPHANISTES. Pascoe.

1205 GRANDIS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886, p. 190.
Fly River.

OROCHLESIS. Pascoe.

1206 ANNULARIS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 194, t. 8,
f. 2. Yule Island, Dorey, &c.

1207 FLESINA, Pascoe, l.c. p. 195. Aru.

1208 MACULOSA, Pascoe, l.c. XII. 1876, p. 40. Salwatty.

ODOSYLLIS. Pascoe.

1209 CRUCIGERA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 277.
Fly River.

1210 GEMMATA, Pascoe, l.c. p. 277. Yule Island.

1211 INGENS, Pascoe, l.c. p. 276. Fly River.

1212 VITIOSA, Pascoe, Journ. Linn. Soc. XII. 1876, p. 41.
Waigiou.

CHÆTECTETORUS. Schönherr.

1213 GRONOPIDES, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 278.
Yule Island.

1214 HISTRIO, Pascoe, l.c. p. 277. Yule Island.

AMADUS. Pascoe.

1215 GESTROI Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 278.
Hatam ; Aru, &c.

GASTROCERCUS. Lap. et Brulle.

- 1216 ANATINUS, Chev. Le Nat. Juin 1882, p. 94.
Yule Island, Dorey, Mysol, &c.

BLEPIARDA. Pascoe.

- 1217 MARMORATA, Kirsch, MT. Mus. Dresd. Heft II. 1877, p. 155.
New Guinea.

- 1218 NEOPHYTA, Pascoe, Journ. Linn. Soc. XI. 1871, p. 211.

Dorey.

- 1219 SIMULATOR, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 279.

Katow, New Guinea.

- 1220 VITIATA, Pascoe, Journ. Linn. Soc. XI. 1871, p. 210. Aru.

- 1221 VOLUTA, Pascoe, l.c. p. 210. Dorey.

PERRHÆBIUS. Pascoe.

- 1222 EPHIPPIGER, Pascoe, Journ. Linn. Soc. XII. 1874, p. 34.

Aru; Dorey.

OSSETERIS. Pascoe.

- 1223 SCUTELLARIS, Pascoe, Journ. Linn. Soc. XI. 1872, p. 480.

Dorey.

MIOCALLES. Pascoe.

- 1224 NOTATUS, Pascoe, Ann. Nat. Hist. (5) XI. 1883, p. 97.

Aru; Mysol.

PSEUDACALLES. Fairmaire.

- 1225 LATERITIUS, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 38.

Duke of York Island.

PETOSIRIS. Pascoe.

- 1226 NIGRITARSIS, Chev. Pet. Nouv. II. 1877, p. 189.

New Guinea.

PROTOPALUS. Schönherr.

- 1227 ALBO-GUTTATUS, Chev. Pet. Nouv. II. 1877, p. 189.

New Guinea.

CRYPTORHYNCHUS. Illiger.

- 1228 CLATHRATUS, Blanch. Voy. Pole Sud, IV. 1853, p. 247, t. 14,
f. 4.

DERETIOSUS. Pascoe.

- 1229 ARIDUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 185, t. 8, f. 10.
Dorey.

PERICHIUS. Pascoe.

- 1230 VERRUCOSUS, Pascoe, Journ. Linn. Soc. XI. 1871, p. 186, t. 8,
f. 9. Waigiou.

ENDYMIA. Pascoe.

- 1231 VIPIO, Pascoe, Journ. Linn. Soc. XI. 1871, p. 200, t. 8, f. 5.
Dorey.

NEDYMORA. Pascoe.

- 1232 VENTRICOSA. Pascoe, Journ. Linn. Soc. XI. 1871, p. 202, t. 8,
f. 1. Aru.

Sub-Family ZYGOPIDES.

MECOPUS. Schönherr.

- 1233 BISPINOSUS, Weber (Rhynchænus) Obs. Ent. p. 94.
Andai, Korido, &c.
1234 DORYOPHORUS, Quoy et Gaim. Voy. Uran. Ent. 1824, p. 82,
f. 9-10. New Guinea.
1235 ONCA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 280.
Fly River.
1236 SERRIROSTRIS, Pascoe, Ann. Nat. Hist. 1871, VII. p. 206.
Andai, Dorey, &c.
1237 TENUIPES, Pascoe, l.c. p. 205. Key; Aru; Dorey.
1238 TRILINEATUS, Guér. Voy. Coquille, 1830, p. 126; Boisd.
Voy. Astrol. II. p. 441. New Ireland.

AGAMETIS. Pascoe.

- 1239 FESTIVA, Pascoe, Journ. Linn. Soc. X. p. 474, t. 19, f. 5.
Andai, &c.
1240 ORTYX, Pascoe, Ann. Nat. Hist. VII. 1871, p. 208. Mysol.

ARACHNOPUS. Guérin.

- 1241 ACUTIPENNIS, Gestro, Ann. Mus. Genov. XIV. 1879, p. 594.
Fly River.

- 1242 ALBOSCAPULATUS, Gestro, l.c. VII. 1875, p. 1009. Korido.
 1243 BINOTATUS, Pascoe, Ann. Nat. Hist. VII. 1871, p. 258.
 Fly River; Aru.
 1244 COMPRESSIPES, Chev. Pet. Nouv. II. 1877, p. 189.
 New Guinea.
 1245 FRENATUS, Voll. Tijdschr. Ent. IX. p. 288, t. 12, f. 5.
 Ramoi.
 1246 GAZELLA, Boisd. Voy. Astrol. II. p. 436, t. 7, f. 22.
 New Guinea; Aru; Waigiou.
 1247 GUTTULIFER, Gestro, Ann. Mus. Genov. VII. 1875, p. 1009.
 Korido.
 1248 INTERRUPTUS, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 40.
 Duke of York Island.
 1249 MELANOSFILUS, Gestro, Ann. Mus. Genov. XIV. 1879,
 p. 563. Fly River.
 1250 MISORIENSIS, Gestro, l.c. VII. 1875, p. 1010. Korido.
 1251 PATRONUS, Pascoe, l.c. (2) II. 1885, p. 281.
 Fly River, Sorong.
 1252 PERSONA, Voll. Tijdschr. Ent. IX. 1886, p. 266, t. 12, f. 3.
 Waigiou.
 1253 PHALERATUS, Pascoe, Ann. Nat. Hist. (4) VII. 1871, p. 259.
 t. 16, f. 9. Mysol.
 1254 SANNIO, Pascoe, l.c. p. 259. Mysol.
 1255 SIMIUS, Pascoe, l.c. p. 259. Mysol.
 1256 STRIGA, Guér. Voy. Coquille, Ent. p. 128, t. 6, f. 5; Boisd.
 Voy. Astrol. II. 1835, p. 436; Lacord. Gen. Col. VII.
 p. 160, note 1. New Guinea.

CHIROZETES. Pascoe.

- 1257 AUGURALIS, Pascoe, Ann. Nat. Hist. 1871, p. 211. Aru.
 1258 GRAMMICUS, Pascoe, l.c. p. 212. Ramoi; Mysol.
 1259 JUNIX, Pascoe, l.c. p. 211. Mysol.
 1260 MARMOREUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 282.
 Fly River.

PHYLAITIS. Pascoe.

- 1261 CONFUSA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 282.
Fly River, Yule Island.
1262 LINEATA, Pascoe, Ann. Nat. Hist. 1871, p. 214. Mysol.
1263 V-ALBA, Pascoe, l.c. p. 214, t. 15, f. 6. Mysol, Dorey.

DÆDANIA. Pascoe.

- 1264 MESOLEUCA, Pascoe, Ann. Nat. Hist. 1871, p. 213, t. 15, f. 1.
Mysol.

METIALMA. Pascoe.

- 1265 NÆVIA, Pascoe, Ann. Nat. Hist. 1871, p. 218, t. 17, f. 4.
Andai, Hatam.
1266 NOVATA, Pascoe, l.c. p. 218. Aru.

OSPILIA. Pascoe.

- 1267 FLAVIROSTRIS, Pascoe, Ann. Nat. Hist. 1871, p. 220.
Mysol.

THYESTETHA. Pascoe.

- 1268 NITIDA, Pascoe, Journ. Ent. II. 1865, p. 427, t. 17, f. 20.
Fly River, Dorey; Aru.

TELANGIA. Pascoe.

- 1269 ASSIMILIS, Pascoe, Ann. Nat. Hist. 1871, p. 260.
Fly River.

XYCHUSA. Pascoe.

- 1270 LARVATA, Pascoe, Ann. Nat. Hist. 1871, p. 263.
Yule Island, Fly River, Aru.

PANTIALIA. Pascoe.

- 1271 ILLUSA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 284.
Fly River.

DIOMIA. Pascoe.

- 1272 TETRAGRAMMA, Pascoe, Ann. Mus. Genov. (2) II. 1885,
p. 285. Fly River.

IDOTASIA. Pascoe.

- 1273 AMPLIATA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 286.
Fly River.

- 1274 *INCLUSA*, Pascoe, Ann. Nat. Hist. 1871, p. 262. Mysol.
 1275 *EBRIOSA*, Pascoe, l.c. p. 262. Salwatty.
 1276 *NASUTA*, Pascoe, Ann. Nat. Hist. 1871, p. 261, t. 16, f. 2.
 Fly River, Dorey.
 1277 *OBLONGA*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 287.
 Aru.
 1278 *PULCHELLA*, Pascoe, l.c. p. 287. Hatam.
 1279 *PULICARIS*, Pascoe, l.c. p. 286. Fly River ; Hatam.
 1280 *RUFIPENNIS*, Pascoe, l.c. p. 286. Fly River.

CAMIA. Pascoe.

- 1281 *SUPERCILIARIS*, Pascoe, Ann. Mus. Genov. (2) II. 1885,
 p. 288. Fly River.

ZYGARA. Pascoe.

- 1282 *DORIÆ*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 289.
 Yule Island.

CÆNOCHIRA. Pascoe.

- 1283 *DORIÆ*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 390.
 Fly River.

SEMIATHE. Pascoe.

- 1284 *OPHTHALMICA*, Pascoe, Ann. Nat. Hist. 1871, p. 263, t. 16,
 f. 15. Mysol.
 1285 *RUFIPENNIS*, Pascoe, l.c. p. 263. Dorey.

COPTURUS. Schönherr.

- 1286 *BOISDUVALI*, Boisd. Voy. Astrol. II. 1835, p. 439 ; Lacord.
 Gen. Col. VII. p. 153, note 4. New Guinea.

TRAGOPUS. Schönherr.

- 1287 *GAZELLA*, Oliv. Ent. V. 83, p. 175, t. 22, f. 303 ; Lacord.
 Gen. Col. VII. p. 160, note 3. Aru.
 1288 *PALLENS*, Blanch. Voy. Pole Sud, IV. 1853, p. 351, t. 14,
 f. 1. Aru.

NAUPHÆUS. Pascoe.

- 1289 *MILIARIS*, Pascoe, Ann. Nat. Hist. 1871, p. 222, t. 16, f. 3.
 Waigiou.

Sub-Family ISORHYNCHIDES.

METETRA. Pascoe.

- 1290 SUTURALIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 47.
Waigiou.

TELEPHAE. Pascoe.

- 1291 DENTICOLLIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 48.
Dorey.

PSENICLEA. Pascoe.

- 1292 PUELLARIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 52.
Dorey.

PANIGENA. Pascoe.

- 1293 PEDESTRIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 53.
Mysol.

CEBRIUS. Pascoe.

- 1294 LUTEICORNIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 54.
Mysol ; Waigiou.

Sub-Family BARIDIDES.

BARIS. Germar.

- 1295 EBENINA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 292.
Andai.
1296 FULVICORNIS, Pascoe, l.c. p. 292. Fly River, Dorey.
1297 LEUCOSPILA, Pascoe, l.c. p. 291. Katau.
1298 VIRGATA, Bohem. Schön. Curc. VIII. Pt. I. p. 176.
Fly River.

MYCTIDES. Pascoe.

- 1299 NITIDULUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 293.
Fly River.

DEGIS. Pascoe.

- 1300 TRIGONOPTERUS, Pascoe, Ann. Mus. Genov. (2) II. 1885,
p. 294. Fly River.

PSEUDOCOLUS. Lacordaire.

- 1301 CINCTUS, Pascoe, Journ. Linn. Soc. XII. 1876, p. 56.
Ramo, Fly River.

1302 *DECIPIENS*, Lacord. Gen. Col. VII. 1866, p. 254; Atl. VII.
t. 75, f. 5, a. New Guinea.

1303 *QUERULUS*, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 297.
Yule Island.

IPSICHORA. Pascoe.

1304 *CÆLESTIS*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 59.
Dorey.

1305 *CUPIDO*, Pascoe, l.c. p. 58. Yule Island.

1306 *FEMORATA*, Pascoe, l.c. p. 59. Aru.

1307 *PULCHELLA*, Pascoe, l.c. p. 59. Salwatty.

METANTHIA. Pascoe.

1308 *CYANEA*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 57.
Waigiou.

1309 *PYRITOSA*, Pascoe, l.c. p. 57, t. 3, f. 4. Dorey, Fly River.

ACYTHOPEUS. Pascoe.

1310 *BIGEMINATUS*, Pascoe, Journ. Linn. Soc. XII. 1873, p. 62.
Aru.

Sub-Family *CALANDRIDES*.

RHYNCHOPHORUS. Herbst.

1311 *FERRUGINEUS*, Oliv. Ent. V. n. 83, p. 79, t. 2, f. 16, d.
New Guinea.

1312 *KAUPI*, Schauf. Nunq. Otios. 1872, p. 448.
velutinus, Fairm. Journ. Mus. Godeffr. 1878, p. 83.
New Britain; Fly River.

1313 *NUDICOLLIS*, Kirsch, MT. Mus. Dresd. Heft II. 1877, p. 156.
Mysol.

1314 *PASCHA*, Bohem. Sch. Gen. Curc. VIII. 2, p. 218.
var. *papuanus*, Kirsch, MT. Mus. Dresd. Heft II. 1877,
p. 156. New Guinea.

1315 *RUBROCINCTUS*, Chev. Ann. Soc. Ent. Belg. (6) II. 1882,
p. 563. New Guinea.

ANATHYMUS. Pascoe.

- 1316 SINGULARIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 299.
Fly River.

SPHENOPHORUS. Schönherr.

- 1317 BECCARII, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 301.
Aru.
- 1318 NEBULOSUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 192. Fly River.
- 1319 OBSCURUS, d'Urville, Boisd. Voy. Astrol. II. p. 148.
Duke of York Island; Fly River.
- 1320 PROMISSUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 300.
Fly River, Katau.
- 1321 TORRIDUS, Pascoe, l.c. p. 302. Aru.

TROCHORHOPALUS, Kirsch.

- 1322 STRANGULATUS, Gyll. (Sphenophorus) Schönh. Cur. IV.
p. 963. Fly River, Katau.

BARYSTETHUS. Lacordaire.

- 1323 ATER, Pascoe, Journ. Linn. Soc. XII. 1873, p. 71.
Ramo, Dorey; Aru.
- 1324 TROPICUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 303.
Fly River.

DIATHETES.

- 1325 DISPAR, Chev. Le Nat. II. 1880, p. 333. Fly River.
- 1326 IMPARATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 304.
Fly River.
- 1327 MORIO, Pascoe, Journ. Linn. Soc. XII. 1873, p. 73. Aru.
- 1328 PICTUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 304.
Fly River.
- 1329 RUFICOLLIS, Pascoe, Journ. Linn. Soc. XII. 1873, p. 72, t. 4,
f. 7. Waigiou.
- 1330 SANNIO, Pascoe, l.c. p. 72. Aru.
- 1331 STRENUUS, Pascoe, l.c. p. 72. Aru.

CALANDRA. Clairville.

- 1332 CRIBROSA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 306.
Sorong.
- 1333 FULIGINOSA, Pascoe, l.c. p. 306. Hatam, Fly River.
- 1334 GRANARIA, Linné, Syst. Nat. ed. XII. p. 608. Yule Island.
- 1335 PALMARUM, Montrouz. Ann. Fr. 1860, p. 911. Aru.
- 1336 PUNCTIGERA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 305.
Ramoi.
- 1337 RUGOSULA, Pascoe, l.c. p. 306. Ramoi.

GANAE. Pascoe.

- 1338 AMÆNA, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 307.
Andai.
- 1339 PULCHELLA, Pascoe, l.c. p. 307. Fly River; Aru.

LAOGONIA. Pascoe.

- 1340 INTRUSA, Pascoe, Journ. Linn. Soc. XII. 1873, p. 76.
Fly River.

SIPALUS. Schönherr.

- 1341 BURMEISTERI, Bohem. Schön. Gen. Curc. IV. p. 802.
granulatus, Boisd. Voy. Astrol. II. p. 443. New Guinea.
- 1342 GIGAS, Fabr. Syst. Ent. p. 127; Oliv. Ent. V. 83, p. 80, t. 12,
f. 146.
- granulatus*, Fabr. Syst. El. II. p. 432. New Guinea.

APHYODA. Pascoe.

- 1343 BRENTHOIDES, Pascoe, Journ. Linn. Soc. XI. 1871, p. 215.
Waigiou.
- 1344 DIURA, Pascoe, l.c. p. 214, t. 7, f. 1. Dorey.

Sub-Family COSSONIDES.

COSSONUS. Clairville.

- 1345 ANXIUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 315.
Dorey.

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1346 BASALIS, Pascoe, l.c. p. 317. Key, Andai, Dorey.

1347 CÆLODERES, Chev. Pet. Nouv. II. 1877, p. 189.
New Guinea.

1348 EPHIPPIGER, Bohem. Schön. Gen. Curc. IV. p. 1007.
Hatam, Waigiou.

1349 INCISUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 317.
Andai.

1350 MACER, Pascoe, l.c. p. 316. Hatam.

1351 THORACICUS, Pascoe, l.c. p. 318. Fly River.

ELATTICUS. Pascoe.

1352 BECCARI, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 310.
Hatam.

STENOTRUPIS. Wollaston.

1353 EXILIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 313. Aru.

GLCEODEMA. Wollaston.

1354 RUFICOLLIS, Woll. Trans. Ent. Soc. 1873, p. 620.
New Guinea.

1355 SPATULA, Woll. l.c. p. 619, t. 3, f. 8.
Hatam, Fly River, Dorey.
var. n. *bispatulata*, Roelofs, CR. Ent. Belg. XVIII. 1875,
p. CVI. New Guinea.

HOMALOTROGUS. Wollaston.

1356 ANGUSTIFRONS, Woll. Trans. Ent. Soc. 1873, p. 624.
Ramo, Fly River ; Aru.

PSILOTROGUS. Pascoe.

1357 EXTENSUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 318.
Hatam.

HETEROPHASIS. Wollaston.

1358 CONCOLOR, Woll. Trans. Ent. Soc. 1873, p. 626.
Fly River, Dorey ; Aru.
1359 RUFICOLLIS, Woll. l.c. p. 625. Ramoi, Dorey.

STEREOBORUS. Wollaston.

- 1360 AFFINIS, Woll. Trans. Ent. Soc. 1873, p. 628. Hatam, &c.
 1361 PUNCTIROSTRIS, Woll. (var. obliteratus) l.c. p. 628.
 New Guinea.
 1362 ROBUSTUS, Woll. l.c. p. 628. Dorey; Aru.

STEREODERUS. Wollaston.

- 1363 LONGIPENNIS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 320.
 Hatam.

CXYDEMA. Wollaston.

- 1364 ATTENUATA, Woll. Trans. Ent. Soc. 1873, p. 632. Dorey.
 1365 NASO, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 321.
 Hatam.

TETRACOPTUS. Wollaston.

- 1366 REDUCTUS, Woll. Trans. Ent. Soc. 1873, p. 641.
 New Guinea.

PSEUDOCOSSONUS. Wollaston.

- 1367 DIMIDIATUS, Woll. Trans. Ent. Soc. 1873, p. 621. Dorey.

PSILODRYOPHTHORUS. Wollaston.

- 1368 COSTATUS, Woll. Trans. Ent. Soc. 1873, p. 595. New Guinea.

PENTARTHURUM. Wollaston.

- 1369 RUGOSUM, Woll. Trans. Ent. Soc. 1873, p. 600. New Guinea.

MICROCOSSONUS. Wollaston.

- 1370 WALLACEI, Woll. Trans. Ent. Soc. 1873, p. 603.
 New Guinea.

PHLEOPHAGOSOMA. Wollaston.

- 1371 FUSIROSTRE, Woll. Trans. Ent. Soc. 1873, p. 610.
 New Guinea.

ORTHOTEMNUS. Wollaston.

- 1372 REFLEXUS, Woll. Trans. Ent. Soc. 1873, p. 634.
 New Guinea.

FUTORNUS. Wollaston.

- 1373 FERRUGINEUS, Woll. Trans. Ent. Soc. 1873, p. 638.
New Guinea.

COPTUS. Wollaston.

- 1374 MINOR, Woll. Trans. Ent. Soc. 1873, p. 639. New Guinea.

LISSOPSIS. Wollaston.

- 1375 SPECULIFRONS, Woll. Trans. Ent. Soc. 1873, p. 643.
New Guinea.

XENOTRUPIS. Wollaston.

- 1376 FUSIFORMIS, Woll. Trans. Ent. Soc. 1873, p. 643. Dorey.

PHÆNOMERUS. Schönherr.

- 1377 LINEATUS, Pascoe, Ann. Mus. Genov. (2) II. 1885, p. 324.
Fly River, Dorey.
1378 NOTATUS, Pascoe, Journ. Linn. Soc. XI. 1872, p. 496, t. 13,
f. 2. Dorey, &c.

Family SCOLYTIDÆ.

CROSSOTARSUS. Chapuis.

- 1379 MNISZECHI, Chap. Mon. Mém. Liège, XX. 1866, p. 62, f. 7.
Aru.

PLATYPUS. Herbst.

- 1380 CHEVROLATI, Chap. Mon. Mém. Liège, XX. 1866, p. 281,
f. 170. New Guinea.
1381 CIRCULARIS, Chap. l.c. p. 285, f. 175. Waigiou.
1382 EXCEDENS, Chap. l.c. p. 276, f. 166. New Guinea.
1383 JANSONI, Chap. l.c. p. 244, f. 146. New Guinea.
1384 LUCASI, Chap. l.c. p. 243, f. 145. New Guinea.
1385 PALLIDUS, Chap. l.c. p. 284, f. 174. New Guinea.

SPATHIDICERUS. Chapuis.

- 1386 NOBILIS, Chap. Mon. Mém. Liège, XX. 1866, p. 315, f. 194.
New Guinea.

Family BRENTHIDÆ.

ORYCHODES. Pascoe.

- 1387 DIAGRAMMA, Boisd. Voy. Astrol. II. p. 310, t. 7, f. 23. ♂.
New Guinea.
1388 PUNCTICOLLIS, Boisd. l.c. p. 312 ; d'Urville, Dej. Cat. 3 ed.
p. 265.
novæ-guinensis, Guér. Voy. Coquille, p. 109, t. 6, f. 13.
New Guinea.

LEPTORHYNCHUS. Guérin.

- 1389 ANGUSTATUS, Guér. Voy. Coquille, Ent. 1830, p. 111, t. 6.
f. 12 ; Boisd. Voy. Astrol. II. p. 318. New Guinea.
1390 BICOLOR, Guér. Voy. Coquille, Ent. 1830, p. 109, t. 6, f. 11 ;
Boisd. Voy. Astrol. II. p. 312. Fly River.
1391 FRONTALIS, Pascoe, Journ. of Ent. I. p. 391. Aru.
1392 LINEARIS, Pascoe, l.c. p. 390. Fly River.
1393 OPHIOPSIS, Pascoe, l.c. p. 391 ; Lacord. Gen. Col. VII. p. 468,
note 2. New Guinea.

ECTOCEMUS. Pascoe.

- 1394 DECEMMACULATUS, Montrouz. (Megacerus) Ann. Soc. Agr.
Lyon, VII. 1, p. 37.
ruficauda, Bates, Proc. Zool. Soc. 1877, p. 156, t. 25, f. 5 ;
Fairm. Ann. Ent. Belg. XXVII. 1883, p. 42.
Duke of York Island, &c.
1395 POGONOCERUS, Montrouz. (Orychodes) Ann. Soc. Agr. Lyon,
VII. 1, 1857, p. 37 ; Lacord. Gen. Col. VII. p. 433, note 1.
spinipennis, Fairm. Le Nat. III. 1881, p. 349 ; Ann. Ent.
Belg. XXVII. 1883, p. 43.
Duke of York Island ; New Guinea.

- 1396 *PTERYGORHINUS*, Gestro, Ann. Mus. Genov. VIII. 1876,
p. 519; Macleay, Proc. Linn. Soc. N.S.W. IX. 1884,
p. 706. Macleay Coast, New Guinea.

- 1397 *WALLACEI*, Pascoe, Journ. of Ent. I. p. 388. Fly River, &c.

BOTHRIORHINUS. Fairmaire.

- 1398 *COSTULIPENNIS*, Fairm. Le Nat. III. 1881, p. 421; Ann.
Ent. Belg. XXVII. 1883, p. 42. Duke of York Island.

EUPSALIS. Lacordaire.

- 1399 *PROMISSA*, Pascoe, Ann. Nat. Hist. 1872, p. 323, t. 14, f. 8.
Fly River.

SCHIZOTRACHELUS. Lacordaire.

- 1400 *SCHMELTZI*, Fairm. Le Nat. III. 1881, p. 421; Ann. Ent.
Belg. XXVII. 1883, p. 44. Duke of York Island.

EUBACTRUS. Lacordaire.

- 1401 *SPISSICORNIS*, Fairm. Le Nat. III. 1881, p. 373; Ann. Ent.
Belg. XXVII. 1883, p. 44. Duke of York Island.

BARYRHYNCHUS. Lacordaire.

- 1402 *INDOCILIS*, Fairm. Le Nat. III. 1881, p. 41.
Duke of York Island.

HORMOCERUS. Schönherr.

- 1403 *RETICULATUS*, Lund. Skrivt. af Naturhist. Selskab. V. ii.
p. 81; Fabr. Syst. El. II. p. 552. Duke of York Island, &c.

PHOCYLIDES. Pascoe.

- 1404 *PASCOEI*, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 193. Fly River.

MIOLISPA. Pascoe.

- 1405 *CORDIFORMIS*, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 193. Fly River.
1406 *EBENINA*, Macleay, l.c. p. 194. Fly River.

JONTHOCERUS. Lacordaire.

- 1407 PAPUENSIS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 194. Fly River.

Family ANTHRIBIDÆ.

XENOCERUS. Schönherr.

- 1408 ARCIFERUS, Blanch. Voy. Pole Sud, IV. 1853, p. 196, t. 13,
f. 4. Fly River, &c.
1409 BARBICORNIS, Gestro, Ann. Mus. Genov. VII. 1875, p. 1018.
Ramoï.
1410 CORÆ, Gestro, l.c. p. 1017. New Guinea; Aru.
1411 EQUESTRIS, Pascoe, Ann. Nat. Hist. (3) V. 1860, p. 35. Aru.
1412 FASTUOSUS, Gestro, Ann. Mus. Genov. VII. 1875, p. 1012.
Korido.
1413 HUMERALIS, Gestro, l.c. p. 1014. Korido.
1414 LACHRYMANS, Thoms. Arch. Ent. I. 1857, p. 438, t. 17, f. 3.
Aru.
1415 LUCTIFICUS, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 45.
Duke of York Island.
1416 NIVEOFASCIATUS, Gestro, Ann. Mus. Genov. VII. 1875,
p. 1015. Mafor.
1417 OLIVACEUS, Mots. Bull. Mosc. XLVIII. ii. 1874, p. 237.
New Guinea.
1418 VELUTINUS, Gestro, Ann. Mus. Genov. VII. 1875, p. 1012.
Korido.

LITOCERUS. Schönherr.

- 1419 FASCIATUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 195. Fly River.
1420 PARVULUS, Macleay, l.c. p. 195. Fly River.
1421 PERPLEXUS, Pascoe, Ann. Nat. Hist. 1860, (3) V. p. 47.
Fly River.
1422 SUBCONVEXUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I.
1886, p. 195. Fly River.

NESSIARA. Pascoe.

- 1423 DEPLANATA, Fairm. Le Nat. III. 1881, p. 45 ; Ann. Ent. Belg. XXVII. 1883, p. 45.

Maclay Coast, New Guinea; Duke of York Island.

- 1424 IRRORATA, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886, p. 196. Fly River.

- 1425 SCELESTA, Pascoe, Journ. of Ent. I. 1860, p. 334. New Guinea.

- 1426 UNITUBERCULATA, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886, p. 196. Fly River.

MECOCERUS. Schönherr.

- 1427 PANTHERINUS, Thoms. Arch. Ent. II. 1857, p. 436. Aru.

ACORYNUS. Schönherr.

- 1428 AMABILIS, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 331. Aru.

PLINTHERIA. Pascoe,

- 1429 LUCTUOSA, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 436 ; 1860, t. 1. New Guinea.

HYLOPEMON. Jekel.

- 1430 GARNOTI, Guér. Voy. Coquille, 1830, p. 108 ; Jc. Règn. Anim. t. 36, f. 3, a-b. ; Boisd. Voy. Astrol. II. p. 298. New Guinea.

HABRISSUS. Pascoe.

- 1431 PILICORNIS, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 432 ; 1860, t. 2. Aru.

APOLECTA. Pascoe.

- 1432 PARVULA, Thoms. Arch. Ent. I. 1857, p. 437 ; Pascoe, Ann. Nat. Hist. 1860, t. 2. Aru.

EUCORYNUS. Schönherr.

- 1433 STEVENSII, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 332 ; 1860, t. 2. New Guinea.

OZOTOMERUS. Perroud.

- 1434 WATERHOUSEI, Pascoe, Ann. Nat. Hist. (3) IV. 1859,
p. 332; 1860, t. 2. Aru.

PHLÆOBIUS. Schönherr.

- 1435 WALLACEI, Pascoe, Ann. Nat. Hist. (3) V. 1860, p. 47.
Aru.

PENESTICA. Pascoe.

- 1436 INEPTA, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 332;
1860, t. 2. Aru.

DOEOTHENA. Pascoe.

- 1437 PLATYPODA, Pascoe, Journ. of Ent. I. 1862, p. 332, t. 16,
f. 1. New Guinea.

DYSNOS. Pascoe.

- 1438 AURICOMIS, Pascoe, Ann. Nat. Hist. (3) IV. 1859, p. 438;
1860, t. 1. Aru.

Family CERAMBYCIDÆ.

Sub-Family PRIONIDES.

ARCHETYPUS. Thomson.

- 1439 FULVIPENNIS, Pascoe, Trans. Ent. Soc. (2) V. 1859, p. 15;
(3) III. 1869, p. 672.
parandroides, Thoms. Class. Longic. 1860, p. 320.
Aru, Dorey, Duke of York Island.

OMOTAGUS. Pascoe.

- 1440 LACORDAIREI, Pascoe, Ann. Nat. Hist. (3) XIX. 1867,
p. 410; Trans. Ent. Soc. (3) III. 1869, p. 674, t. 23, f. 1.
New Guinea.

CLINOPLEURUS. Lansberge.

- 1441 ARFAKIANUS, Lansb. Notes Leyd. Mus. VI. 1884, p. 142.
New Guinea.

XIXUTHRUS. Thomson.

1442 AXIS, Thoms. Ann. Fr. 1877, Bull. p. CLXVII. New Guinea.

1443 LUNICOLLIS, Lansb. Notes Leyd. Mus. VI. 1884, p. 140.

Key, Mysol, &c.

1444 MICROCERUS, White, Longic. VII. 1, 1853, p. 40 ; Thoms.
Syst. Ceramb. p. 296 ; Kaup, Einig. Ceramb. 1866, t. 1,
f. 1 ; Pascoe, Trans. Ent. Soc. (3) III. 1869, p. 664.

Duke of York Island.

XAURUS. Pascoe.

1445 PAPUUS, Lansb. Notes Leyd. Mus. VI. 1884, p. 153.

New Guinea.

CRYPTOBELUS. Thomson.

1446 GESTROI, Thoms. Ann. Fr. 1878, Bull. p. CXLVIII.

New Guinea.

Sub-Family CERAMBYCIDES.

NEOCERAMBYX. Thomson.

1447 AURIFABER, White, Longic. VII. 1, 1853, p. 128 ; Pascoe,
Trans. Ent. Soc. Lond. (3) III. 1869, p. 510.

Duke of York Island.

HOPLOCERAMBYX. Thomson.

1448 SEVERUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 514.

Waigiou.

PACHYDISSUS.

1449 TERNATENSIS, Fairm. Pet. Nouv. Ent. 1879 No. 70 ; Ann.
Soc. Ent. Belg. XXVII. 1883, p. 51.

Duke of York Island, Yule Island, &c., New Guinea.

CERESIUUM. Newman.

1450 LANUGINOSUM, Schauf. Sitz. Ges. Isis, 1884, p. 23.

New Guinea.

1451 PACHYMERUM, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 542.

Maclay Coast, New Guinea.

- 1452 *VALIDIPES*, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 46.
New Britain.
1453 *VITTICOLLE*, Fairm. l.c. p. 46. New Britain.

EXAMNES. Pascoe.

- 1454 *IDONEUS*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 540. Waigiou.
1455 *LONGICORNIS*, Pascoe, l.c. p. 540, t. 20, f. 3. Dorey.

TETHIONEAE. Pascoe.

- 1456 *UNICOLOR*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 543, t. 20, f. 4. Aru.

DICTAMNIA. Pascoe.

- 1457 *RUGOSA*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869, p. 546.
Dorey.

WESTWOODIA. Kaup.

- 1458 *BILINEATA*, Rits. (Aprosictus) Notes Leyd. Mus. 1881, p. 145.
Waigiou.

SYLLITUS. Pascoe.

- 1459 *PAPUANUS*, Gestro, Ann. Mus. Genov. VII. 1875, p. 1021.
Hatam, N. Guinea.

MERIONOEDA. Pascoe.

- 1460 *MELANOPSIS*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 572. Aru.

CHLORIDOLUM. Thomson.

- 1461 *RUFESCENS*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 590. Waigiou.

CLYTUS. Laicharting.

- 1462 *AUSTERUS*, Chevr. Mon. Mém. Liège, XVIII. 1863, p. 297.
New Guinea.

- 1463 *HYPOLEUCUS*, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 609. Aru.

- 1464 *LEUCOTHYREUS*, Pascoe, l.c. p. 601. Aru.

- 1465 *PRÆTEXTUS*, Pascoe, l.c. p. 604. Mysol.

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1466 VARIICOLLIS, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 52.
Duke of York Island.

1467 VELUTINUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 203. Fly River.

CLYTANTHUS. Thomson.

1468 ANGUSTULUS, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 203. Fly River, New Guinea.

1469 LUXATA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 602. Macleay Coast, New Guinea.

PERISSUS. Chevrolat.

1470 ANTENNATUS, Pascoe, Trans. Ent. Soc. (3) III. 1869, p. 616.
Aru.

1471 TRIZONATUS, Blanch. Voy. Pole Sud, IV. 1853, p. 270, t. 16,
f. 7. New Guinea, Duke of York Island.

1472 X-LITTERA, Chevr. Mon. Mém. Liège, XVIII. 1863, p. 263.
Aru.

HALME. Pascoe.

1473 CLERIFORMIS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 642. Mysol.

ACROCYRTA. Pascoe.

1474 ANNULICORNIS, Chevr. Mém. Liège, 1861, p. 7 ; 1863, p. 259.
Aru.

1475 CULICINA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1869,
p. 633. Waigiou.

1476 INTERRUPTA, Pascoe, l.c. p. 636. Mysol.

1477 NOTATOR, Pascoe, l.c. p. 360. Aru.

1478 SOSPITALIS, Pascoe, l.c. p. 625. Dorey.

TRAGOCERUS. Serville.

1479 HERALDICUS, Vollenh. Tijdschr. v. Ent. 1871, p. 106.
New Guinea.

Sub-Family LAMIIDES.

SPHINGNOTUS. Perroud.

- 1480 ALBERTISI, Gestro, Ann. Mus. Genov. VIII. 1876, p. 523.
New Guinea
- 1481 AMALIE, Gestro (Pascoea) l.c. IX. 1876, p. 171.
Ramo, New Guinea.
- 1482 DOHRNI, Fairm. Le Nat. 1881, p. 48. New Britain.
- 1483 DUNNINGI, Pascoe, Trans. Ent. Soc. Lond. 1868, p. 484,
t. 18, f. 4; Fairm. Ann. Ent. Belg. XXVII. 1883, p. 47.
Duke of York Island.
- 1484 MIRABILIS, Boisd. Voy. Astrol. II. 1835, p. 468; Montrouze.
Ann. Soc. Agr. Lyon, VII. 1857, p. 58; Pascoe, Trans.
Ent. Soc. (3) III. 1868, p. 483.
admirabilis, Boisd. Voy. Astrol. II. 1835, t. 8, f. 5.
Idæ, White (Pascoea), Longic. VIII. 2, 1855, p. 341. t. 8,
f. 5; Chevr. Ann. Fr. 1859, Bull. p. v.; Pascoe, Trans.
Ent. Soc. Lond. (3) III. 1869, p. 486, t. 19, f. 6; Lacord.
Gen. Atl. X. t. 96, f. 1, ♂. Aru, New Guinea, &c.
- 1485 YORKENSIS, Fairm. Le Nat. 1881, p. 359.
Duke of York Island.

ELAIS. Thomson.

- 1486 BIMACULATA, Gestro, Ann. Mus. Genov. IX. 1876, p. 173.
Ramo, New Guinea.
- 1487 EXARATA, Pascoe, Journ. of Ent. I. 1862, p. 364; Trans.
Ent. Soc. Lond. (3) III. 1868, p. 496, t. 19, f. 7.
thoracica, Thoms. Syst. Ceramb. 1864, p. 32. Aru.

ARRHENOTUS. Pascoe.

- 1488 ADSPERSUS, Blanch. Voy. Pole Sud, IV. 1853, p. 279;
Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 489.
marmoratus, Hombr. et Jacq. Voy. Pole Sud, Atl. t. 16,
f. 18. Aru.
- 1489 BIARCIFER, Blanch. Voy. Pole Sud, IV. 1853, p. 280, t. 16,
f. 12; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868,
p. 491. New Guinea.

- 1490 FLEXUOSUS, Pascoe, l.c. p. 489. New Guinea.
- 1491 HUMILIS, Gestro, Ann. Mus. Genov. IX. 1876, p. 173.
Ramoï, New Guinea.
- 1492 SULCATIPENNIS, Blanch. Voy. Pole Sud, IV. 1853, p. 281,
t. 16, f. 19; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868,
p. 490. Waigiou.
- TMESISTERNUS. Latreille.
- 1493 AGRILOIDES, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868,
p. 481. New Guinea.
- 1494 ANALIS, Pascoe, l.c. p. 465; Gestro, Ann. Mus. Genov. IX.
1876, p. 155. New Guinea, Salwatty, Jobi, &c.
- 1495 ARFAKIANUS, Gestro, Ann. Mus. Genov. IX. 1876, p. 158.
Hatam, New Guinea.
- 1496 AVARUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 477.
Key.
- 1497 BIZONATUS, Blanch. Voy. Pole Sud, IV. 1853, p. 285.
trivittatus, Hombr. et Jacq. l.c. t. 16, f. 16. New Guinea.
- 1498 BRUIJNI, Gestro, Ann. Mus. Genov. IX. 1876, p. 154.
Salwatty.
- 1499 CONICOLLIS, Thoms. Syst. Ceramb. 1865, p. 34 et p. 483;
Pascoe, Trans. Ent. Soc. (3) III. 1868, p. 480. Aru.
- 1500 CONTRAVERSUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868,
p. 478. Andai, Dorey, &c.
- 1501 DEJEANI, Thoms. Syst. Ceramb. 1865, p. 546.
Thomsoni, Pascoe, Trans. Ent. Soc. (3) III. 1868, p. 475.
Maclay Coast; Aru.
- 1502 DISTINCTUS, Boisd. Voy. Astrol. II. 1835, p. 471.
New Guinea.
- 1503 ELATEROIDES, Gestro, Ann. Mus. Genov. IX. 1876, p. 160.
Hatam, New Guinea.
- 1504 EQUESTRIS, Pascoe, Trans. Ent. Soc. (3) III. 1868, p. 462.
New Guinea.
- 1505 FROGGATTI, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886,
p. 200. Fly River.
- 1506 GEELVINKIANUS, Gestro, Ann. Mus. Genov. IX. 1876, p. 159.
Ansus, Jobi.

- 1507 *GRISEUS*, Thoms. Syst. Ceramb. 1865, p. 546 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 472.
Wokan, Aru.
- 1508 *HERBACEUS*, Pascoe, Journ. of Ent. I. 1862, p. 365 ; Trans. Ent. Soc. Lond. (3) III. 1868, p. 471, t. 19, f. 4.
Ramoï, Andai, Dorey, Waigiou, &c.
- 1509 *HIEROGLYPHICUS*, Blanch. Voy. Pole Sud, IV. 1853, p. 286, t. 16, f. 4 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 477.
Aru, Fly River, &c.
- 1510 *IMMITIS*, Pascoe, l.c. p. 482. Mysol.
- 1511 *INTRICATUS*, Pascoe, l.c. p. 471. Mysol.
- 1512 *IRREGULARIS*, Gestro, Ann. Mus. Genov. IX. 1876, p. 165.
Mausinam, near Dory.
- 1513 *ISABELLÆ*, Vollenh. Tijdschr. v. Ent. 1871, p. 107, t. 4, f. 7 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 483 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 152. Salwatty.
- 1514 *JASPIDIUS*, Boisd. Voy. Astrol. II. 1835, p. 473.
New Guinea.
- 1515 *JOBIIENSIS*, Gestro, Ann. Mus. Genov. IX. 1876, p. 164.
Ansus, Jobi.
- 1516 *LATERALIS*, Macleay, Proc. Linn. Soc. N.S.W. (2) I. 1886, p. 202. Fly River.
- 1517 *LINEATUS*, Macleay, l.c. p. 201. Fly River.
- 1518 *MARMORATUS*, Guér. Voy. Coquille, 1830, p. 131, t. 7, f. 13 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 473 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 156.
viridipes, Thoms. Syst. Ceramb. 1865, p. 546.
Salwatty, Jobi, New Guinea, &c.
- 1519 *MONTICOLA*, Gestro, Ann. Mus. Genov. IX. 1876, p. 161.
Mount Epa, S. E. New Guinea.
- 1520 *OBLONGUS*, Boisd. Voy. Astrol. II. 1835, p. 474.
New Guinea.
- 1521 *OBSOLETUS*, Blanch. Voy. Pole Sud, IV. 1853, p. 282, t. 16, f. 20 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 474.
Aru.

- 1522 PLEURISTICTUS, Pascoe, l.c. p. 478. Aru.
- 1523 POLITUS, Blanch. Voy. Pole Sud, IV. 1853, p. 288, t. 16, f. 17 ; Thoms. Class. Longic. p. 358 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 461 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 152. Aru, New Guinea, &c.
- 1524 PULVEREUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868. p. 466. Salwatty, &c.
- 1525 RESTRICTUS, Pascoe, l.c. p. 464 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 155. Aru, New Guinea.
- 1526 RUGOSICOLLIS, Blanch. Voy. Pole Sud, IV. 1853, p. 283, t. 16, f. 11. New Guinea.
- 1527 SCHAUMI, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 462. Key.
- 1528 SPECIOSUS, Pascoe, l.c. p. 479, t. 19, f. 1. Mysol.
- 1529 SPINICOLLIS, Boisd. Voy. Astrol. II. 1835, p. 472. Waigiou.
- 1530 SUBCINCTUS, Gestro, Ann. Mus. Genov. IX. 1876, p. 163. Jobi.
- 1531 TESSELLATUS, Boisd. Voy. Astrol. II. 1835, p. 471. New Guinea.
- 1532 TRANSVERSUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 476, t. 19, f. 5 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 161. Aru, New Guinea.
- 1533 TRIVITTATUS, Guér. Voy. Coquille, 1830, p. 130, t. 7, f. 12 ; Blanch. Voy. Pole Sud, IV. 1853, p. 284, t. 16, f. 15 ; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 464 ; Gestro, Ann. Mus. Genov. IX. 1876, p. 154.
bicinctus, Boisd. Voy. Astrol. II. 1835, p. 473.
bizonulatus, Guér. Jc. Règn. Anim. p. 250, t. 45, f. 7, a. Aru, New Guinea.
- 1534 UNIPUNCTATUS, Guér. Voy. Coquille, p. 132 ; Boisd. Voy. Astrol. II. 1835, p. 471. Ramoi, New Guinea.
- 1535 VILLARIS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1868, p. 474. Andai, Dorey.
- 1536 VIRIDIS, Gestro, Ann. Mus. Genov. IX. 1876, p. 157. Hatam.

PELARGODERUS. Serville.

- 1537 AROUENSIS, Thoms. Arch. Ent. I. 1857, p. 446, t. 17, f. 8 ;
 Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866, p. 277.
 Aru, Duke of York Island.

PARAGNOMA. Blanchard.

- 1538 ACUMINIPENNIS, Blanch. Voy. Pole Sud, IV. 1853, p. 298,
 t. 17, f. 9 ; Pascoe, Trans. Ent. Soc. (3) III. 1866,
 p. 280 ; Lacord. Gen. Atl. IX. 1869, p. 313. Aru.

DIOCHARES. Pascoe.

- 1539 BASIGRANATUS, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 51.
 New Britain.
 1540 FIMBRIATUS, Oliv. Encycl. Méth. VII. 1792, p. 460 ;
 Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866, p. 303.
 Duke of York Island.

MONOHAMMUS. Serville.

- 1541 CAPTIOSUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866,
 p. 298. New Guinea.
 1542 HOLOTEPHRUS, Boisd. Voy. Astrol. II. 1835, p. 498, t. 8,
 f. 3 ; Blanch. Voy. Pole Sud, IV. 1853, p. 294, t. 17, f. 6.
 New Ireland.
 1543 LITIGIOSUS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866,
 p. 295. Aru.
 1544 LONGICORNIS, Thoms. Arch. Ent. I. p. 144, t. 17, f. 6 ;
 Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866, p. 291.
 Aru, Duke of York Island.
 1545 RARUS, Thoms. l.c. p. 445, t. 17, f. 7 ; Pascoe, l.c. p. 291.
 Aru, Duke of York Island.
 1546 RUSTICATOR, Fabr. Syst. El. II. p. 294 ; Blanch. Voy. Pole
 Sud, IV. p. 294, t. 17, f. 5. Duke of York Island, &c.
 1547 RUBROPUNCTATUS, Guér. Voy. Coquille, 1830, p. 137, t. 7,
 f. 4. New Guinea.

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1550 VARIOLARIS, Pascoe, l.c. p. 295. New Guinea.

BATOCERA. Castelnau.

- 1551 AENEONIGRA, Thoms. Mon. Arcan. Nat. 1859, p. 71.
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1871, p. 211, t. 9, f. 1. New Guinea.
1553 BROWNI, Bates, Proc. Zool. Soc. Lond. 1877, p. 157, t. 25,
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1554 LACTIFLUA, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 50.
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1555 LAENA, Thoms. Arch. Ent. I. p. 450, t. 19, f. 1; Mon.
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1556 NEBULOSA, Bates, Proc. Zool. Soc. Lond. 1877, p. 157,
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1558 PROSERPINA, Thoms. l.c. p. 551. Aru.
1559 WALLACEI, Thoms. Arch. Ent. I. p. 447, t. 18, f. 1; Mon.
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1561 VETUSTA, Rits. l.c. p. 13. Dorey.

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- 1562 CINEREA, Chev. Rev. Zool. 1852, p. 416; Pascoe, Trans.
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- 1564 PRISTIS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866, p. 282;
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- 1565 THOMSONI, Lansb. Ann. Soc. Belg. 1880, Bull. p. cxxxviii.
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- 1566 LICTOR, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866, t. 14,
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1567 TESTATOR, Pascoe, l.c. p. 283. New Guinea.

GNOMA. Fabricius.

- 1568 ALBOTESSELLATA, Blanch. Voy. Pole Sud, IV. 1853, p. 297,
t. 17, f. 8; Pascoe, Trans. Ent. Soc. Lond. (3) III. 1866,
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1569 AFFINIS, Guér. Voy. Coquille, 1830, p. 136, t. 7, f. 10;
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- 1576 OBSCURA, Macleay, Proc. Linn. Soc. N.S.W., IX. 1884,
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- 1585 ORBIGNYI, Guér. Voy. Coquille, 1830, p. 134, t. 7, f. 6.
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- 1598 CONSPUTA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1867,
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- 1599 INSTABILIS, Pascoe, l.c. p. 455, t. 18, f. 3. Aru.

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- 1600 HISTRIO, Pascoe, Trans. Ent. Soc. Lond. (2) V. 1859, p. 43;
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1610 GUTTULATA, Bates, Proc. Zool. Soc. Lond. 1877, p. 158,
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- 1613 CARINICOLLIS, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1864,
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1619 DISJUNCTA, Pascoe, l.c. p. 182. New Guinea.
1620 DUPLICATA, Pascoe, l.c. p. 179. New Guinea.
1621 FUSTRATA, Pascoe, l.c. p. 181. Aru.
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1629 TERREA, Pascoe, l.c. p. 169. Aru.
1630 TORPIDA, Pascoe, l.c. p. 169. New Guinea.
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- 1640 VEXATA, Pascoe, l.c. p. 63. Saylee, New Guinea.

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- 1642 SINUATOFASCIATUS, Blanch. Voy. Pole Sud, IV, 1853, p. 291,
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- 1645 PERVERSA, Pascoe, l.c. p. 69. New Guinea

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1661 *DESUETA*, Pascoe, l.c. p. 206. New Guinea.
1662 *DISCRETA*, Pascoe, l.c. p. 216. Saylee.
1663 *GRAMMICA*, Pascoe, l.c. p. 206. Mysol.
1664 *JEJUNA*, Pascoe, l.c. p. 201. New Guinea.
1665 *INANIS*, Pascoe, l.c. p. 204. Salvatty.
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 1670 MODESTA, Pascoe, l.c. p. 209. Saylee.
 1671 NOTATIPENNIS, Pascoe, l.c. p. 202. Mysol.
 1672 NUBILA, Pascoe, l.c. p. 212. Aru.
 1673 PULVEREA, Pascoe, l.c. p. 215. New Guinea.
 1674 PUDITA, Pascoe, l.c. p. 206. Mysol.
 1675 REFECTA, Pascoe, l.c. p. 219. New Guinea.
 1676 RUFULA, Pascoe, l.c. p. 217. Aru.
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1696 MUTATUS, Pascoe, l.c. p. 31. Aru.
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- 1702 AROUENSIS, Thoms. Arch. Ent. I. 1857, p. 457; Pascoe,
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- 1703 CYANIPENNIS, Thoms. Arch. Ent. I. 1857, p. 458; Trans.
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Dorey; Macleay Coast.

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- 1712 VANESSA, Pascoe, l.c. p. 408, t. 17, f. 10. Waigiou.
- 1713 VENENATA, Pascoe, l.c. p. 405. Dorey.
- 1714 VENUSTA, Guér. Voy. Coquille, p. 139, t. 7, f. 5; Pascoe,
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- 1715 VITTIFERA, Boisd. Voy. Astrol. II. p. 516, t. 9, f. 19;
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- 1716 XANTHOTÆNIA, Gestro, Ann. Mus. Genov. VII. 1875, p. 1023.
Jobi.

XYASTE. Pascoe.

- 1717 PALLIATA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1867,
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OBEREA. Mulsant.

- 1718 DEFLUA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1867,
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- 1719 ELONGATULA, Boisd. Voy. Astrol. II. p. 518. New Guinea.
- 1720 MUNDULA, Pascoe, Trans. Ent. Soc. (3) III. 1867, p. 432.
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- 1721 NEFASTA, Pascoe, l.c. p. 427. Mysol.

CHREONOMA. Pascoe.

- 1722 BIMACULATA, Pascoe, Trans. Ent. Soc. Lond. (3) III. 1867,
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- 1723 FLAVICINCTA, Pascoe, l.c. p. 359. Saylee.

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LEMA. Fabricius.

- 1724 ATRICEPS, Baly, Trans. Ent. Soc. Lond. (3) IV. 1865, p. 14.
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- 1726 CONNECTENS, Baly, l.c. p. 13. Aru.
- 1727 CYANESTHIS, Boisd. Voy. Astrol. Col. II. 1835, p. 533 ;
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(3) IV. 1865, p. 14. New Guinea.
- 1729 MILITARIS, Baly, Trans. Ent. Soc. Lond. (3) I. 1863, p. 612 ;
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Voy. Pole Sud, IV. p. 308.
New Guinea ; Duke of York Island.
- bicolora*, Boisd. Voy. Astrol. Col. 1835, II. p. 532, t. 8, f. 8.
Dorey.
- 1731 SEMILIMBATA, Blanch. Voy. Pole Sud, IV. Zool. p. 307, t. 18,
f. 3. New Guinea.
- 1732 UNICINCTA, Guér. Jc. Règn. Anim. Ins. p. 264 ; Lacord.
Mon. Mém. Liège, III. 1845, p. 343. New Guinea.
- unifasciata*, Guér. Voy. Coquille, Zool. 1830, II. p. 140.
Dorey.
- CRIOCERIS. Geoffroy.
- 1733 DORYCA, Boisd. Voy. Astrol. Col. 1835, p. 533, t. 8, f. 7 ;
Guér. Jc. Règn. Anim. Ins. p. 260, t. 47, f. 10 ; Lacord.
Mon. p. 570. New Guinea.
- 1734 NIGROZONATA, Blanch. Voy. Pole Sud, IV. Zool. p. 309.
New Guinea.
- 1735 OBLITERATA, Baly, Trans. Ent. Soc. (3) IV. 1, 1865, p. 30.
New Guinea.

Sub-Family CRYPTOCEPHALIDES.

BUCHARIS. Baly.

- 1736 SUFFRIANI, Baly, Trans. Ent. Soc. Lond. (3) IV. 1, 1865,
p. 62, t. 3, f. 8. New Guinea.

DITROPIDUS. Erichson.

- 1737 WALLACEI, Baly, Ann. Nat. Hist. (4) XX. 1877, p. 379.
Mysol.

CRYPTOCEPHALUS. Geoffroy.

- 1738 FULVOFASCIATUS, Jacoby, Ann. Mus. Genov. XX. 1884,
p. 194. Fly River.

LOXOPLEURUS. Suffrian.

- 1739 LAETUS, Baly, Trans. Ent. Soc. Lond. (3) IV. 2, 1867,
p. 77, t. 3, f. 7. Key Island.

Sub-Family EUMOLPIDES.

CALLIDEMUM. Blanchard.

- 1740 VIRIDE, Blanch. Voy. Pole Sud, IV. Zool. 1853, p. 325.
t. 12, f. 8 ; Chap. Gen. Col. X. p. 349. New Guinea.

NODOSTOMA. Motschulsky.

- 1741 AFFINIS, Baly, Phytoph. Trans. Ent. Soc. Lond. (3) IV.
1867, p. 243. Aru.
- 1742 ARUENSIS, Jacoby, Ann. Mus. Genov. XX. 1884, p. 218.
Wokan, Aru, &c.
- 1743 CUPREOCYANEA, Fairm. Ann. Ent. Belg. XXVII. 1883,
p. 54. Duke of York Island.
- 1744 DIVERSIPES, Baly, Phytoph. Trans. Ent. Soc. Lond. (3) IV.
1867, p. 253. Mysol.
- 1745 EVANESCENS, Baly, l.c. p. 243 ; Jacoby, Ann. Mus. Genov.
XX. 1884, p. 224. New Guinea.
- 1746 ORNATISSIMA, Jacoby, l.c. p. 215. Wokan, Aru Island.
- 1747 PALLIDIPES, Baly, Phytoph. Trans. Ent. Soc. Lond. (3) IV.
1867, p. 250. Dorey.

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- 1748 *PICTA*, Baly, l.c. p. 227. Aru Island.
1749 *PULCHELLA*, Baly, l.c. p. 252. Waigiou.

DEMOTINA. Baly.

- 1750 *JANSONI*, Baly, *Phytoph.* 1867, p. 89. Waigiou.
1751 *PAUPERATA*, Baly, l.c. p. 88. Dorey.

RHYPARIDA. Baly.

- 1752 *AMABILIS*, Baly, *Phytoph. Trans. Ent. Soc. Lond.* (3) IV.
1867, p. 193. New Guinea.
1753 *APPROXIMATA*, Baly, l.c. p. 184. Mysol.
1754 *ARUENSIS*, Baly, l.c. p. 186. Aru.
1755 *ATRATA*, Macleay, *Proc. Linn. Soc. N.S.W.* IX. 1884, p. 709.
Maclay Coast.
1756 *BASALIS*, Baly, *Phytoph.* 1867, p. 168 ; Jacoby, *Ann. Mus.*
Genov. XX. 1874, p. 194. Dorey.
1757 *BIPUSTULATA*, Baly, l.c. p. 199. Waigiou.
1758 *CASTANEA*, Jacoby, l.c. p. 205. Fly River.
1759 *CORINTHIA*, Boisd. *Voy. Astrol. Col.* p. 582 (gen. dub.).
New Guinea.
1760 *CUPREATA*, Baly, *Phytoph.* 1867, p. 177.
Southern New Guinea.
1761 *ELEVATA*, Baly, l.c. p. 205. Waigiou.
1762 *FASCIATA*, Baly, l.c. p. 168. Dorey.
1763 *FEMORATA*, Baly l.c. p. 172. Northern New Guinea.
1764 *FRATERNALIS*, Baly, l.c. p. 174. Northern New Guinea.
1765 *FRONTALIS*, Baly, l.c. p. 181. Dorey.
1766 *FULVIPES*, Baly, l.c. p. 189. Key.
1767 *GENICULATA*, Baly, *Journ. of Ent.* I. 1861, p. 288 ; *Phytoph.*
p. 185. Dorey.
1768 *IMPRESSICOLLIS*, Baly, *Phytoph.* 1867, p. 176. Dorey.
1769 *INCONSPICUA*, Baly, l.c. p. 194. New Guinea.
1770 *INSTABILIS*, Baly, l.c. p. 188. New Guinea, Mysol.
1771 *INTERMEDIA*, Baly, l.c. p. 188. Waigiou.

- 1772 LABIATA, Baly, l.c. p. 171. Northern New Guinea.
- 1773 LÆVIFRONS, Jacoby, Ann. Mus. Genov. XX. 1884, p. 201.
Ramoï, Sorong, Andai.
- 1774 LATERIVITTATA, Baly, Phytoph. 1867, p. 207. Mysol.
- 1775 MELANCHOLICA, Jacoby, Ann. Mus. Genov. XX. 1884, p. 198.
Ramoï, New Guinea.
- 1776 METALLICA, Jacoby, l.c. p. 209. Ramoï, New Guinea.
- 1777 MOESTA, Baly, Phytoph. 1867, p. 178. Northern New Guinea.
- 1778 MOROSA, Jacoby, Ann. Mus. Genov. XX. 1884, p. 202.
Yule Island, New Guinea.
- 1779 NIGRIPENNIS, Baly, Phytoph. 1867, p. 167. New Guinea.
- 1780 NIGROÆNEA, Baly, l.c. p. 173. Southern New Guinea.
- 1781 NUCEA, Baly, l.c. p. 204. New Guinea.
- 1782 OBSOLETA, Baly, l.c. p. 185. Dorey.
- 1783 OPACIPENNIS, Jacoby, Ann. Mus. Genov. XX. 1884, p. 199.
Fly River.
- 1784 PARVULA, Baly, Phytoph. 1867, p. 208. New Guinea.
- 1785 PICEA, Baly, l.c. p. 179. Southern New Guinea.
- 1786 PICTA, Baly, l.c. p. 200. Dorey.
- 1787 PLACIDA, Baly, l.c. p. 191. Key.
- 1788 PULCHELLA, Baly, Journ. of Ent. I. 1861, p. 287 ; Phytoph.
p. 165. Dorey, Mysol.
- 1789 PURPUREA, Baly, Phytoph. 1867, p. 174. New Guinea.
- 1790 QUADRIPUSTULATA, Jacoby, Ann. Mus. Genov. XX. 1884,
p. 206. Korido.
- 1791 REGULARIS, Baly, Phytoph. 1867, p. 165. Dorey.
- 1792 SCUTELLATA, Baly, l.c. p. 175. Waigiou.
- 1793 SULCICOLLIS, Baly, l.c. p. 199. New Guinea.
- 1794 SUSPECTA, Baly, l.c. p. 190. Mysol.
- 1795 TERMINATA, Jacoby, Ann. Mus. Genov. XX. 1884, p. 199.
Fly River.
- 1796 TRILINEATA, Baly, Phytoph. 1867, p. 206 ; Jacoby, l.c.
p. 202. Fly River, Katow, &c.

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1797 VARIABILIS, Baly, l.c. p. 182. Dorey.

1798 VIRIDANA, Gestro, Ann. Mus. Genov. XX. 1884, p. 211.

Katow, New Guinea.

1799 VIRIDIPENNIS, Gestro, l.c. p. 212. Fly River, Ramoi, &c.

COLASPOSOMA. Castelnau.

1800 REGULARIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 21.

Fly River.

PSEUDOLPUS. Jacoby.

1801 ORNATUS, Jacoby, Ann. Mus. Genov. XX. 1884, p. 225.

Jobi, Fly River.

THYRASIA. Jacoby.

1802 MARGINATA, Jacoby, Ann. Mus. Genov. XX. 1884, p. 229.

Fly River.

TYPOPHORUS. Erichson.

1803 CYANELLUS, Boisd. Voy. Astrol. Col. 1835, p. 583 (gen.
dub.). New Guinea.

STETHOTES. Baly.

1804 APICICORNIS, Baly, Phytoph. Trans. Ent. Soc. Lond. (3)
IV. 1867, p. 256. Aru.

1805 ATRA, Baly, l.c. p. 259. Dorey.

1806 BASALIS, Jacoby, Ann. Mus. Genov. XX., 1884, p. 231.

Fly River.

1807 HIRTIPES, Jacoby, l.c. p. 232. Fly River.

1808 LATERALIS, Baly, Phytoph. 1867, p. 257. Aru, New Guinea.

1809 NIGRITULA, Baly, l.c. p. 258. Dorey.

1810 NIGROVIRIDIS, Jacoby, Ann. Mus. Genov. XX. 1884, p. 232.
Misori, Korido, &c.

1811 TARSATA, Baly, Phytoph. 1867, p. 258. Dorey.

CORYNODES. Hope.

1812 PROPINQUUS, Baly, Phytoph. Trans. Ent. Soc. Lond. (3)
IV. 1867, p. 113. Waigiou.

Sub-Family CHRYSOMELIDES.

PLAGIODERA. Redtenbacher.

- 1813 CHAPUISI, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 31.
Fly River, Yule Island, &c,
1814 MARGINATA, Baly, Trans. Ent. Soc. Lond. (3) IV. 1867,
p. 299. New Guinea.
1815 RIPARIA, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 31.
Fly River.

CHALCOMELA. Baly.

- 1816 INTERMEDIA, Baly, Trans. Ent. Soc. Lond. (3) IV. 1867,
p. 296. Mysol.
1817 NIGRIPENNIS, Baly, l.c. p. 297. Waigiou.
1818 RUBRIPUSTULATA, Baly, l.c. p. 297. New Guinea.

AESERNIA. Stal.

- 1819 CORALLIPES, Gestro, Ann. Mus. Genov. VII. 1875, p. 1025.
Dorey.
1820 FORMOSA, Gestro, l.c. VIII. 1876, p. 524.
Humboldt Bay, New Guinea.
1821 LATEFASCIATA, Jacoby, Notes Leyd. Mus. IX. 1887, p. 301.
Port Moresby.
1822 MAGNIFICA, Baly, Trans. Ent. Soc. Lond. (3) I. 1863, p. 618.
New Guinea.
1823 PULCHELLA, Gestro, Ann. Mus. Genov. VIII. 1876, p. 524.
Sorong, New Guinea.
1824 SPLENDENS, Guér. Voy. Coquille, II. Zool. 1830, p. 144 ; Jc.
Règn. Anim. t. 49, f. 4. Salwatty, New Guinea.
1825 SPLENDIDA, Boisd. Voy. Astrol. Col. 1835, p. 375 ; Blanch.
Voy. Pole Sud, Zool. IV. p. 322, t. 19, f. 2 ; Baly, Trans.
Ent. Soc. (3) I. 1863, p. 289 ; d'Urville, Dej. Cat. 3 ed.
p. 419. New Guinea.
1826 SUMPTUOSA, Gestro, Ann. Mus. Genov. VIII. 1876, p. 523.
Korido, New Guinea.

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- 1827 TRICOLOR, Chev. Voy. Coquille, II. Zool. 1833, p. 145.
splendens, Blanch. Voy. Pole Sud, Zool. IV. p. 333, t. 19, f. 3.
Aru.
1828 WHITEI, Baly, Journ. of Ent. I. 1861, p. 293; Phytoph.
p. 289, t. 5, f. 6. New Guinea.

PHYLLOCHARIS. Dalman.

- 1829 ABDOMINALIS, Baly, Trans. Ent. Soc. Lond. (3) IV. 1865,
p. 286. Dorey.
1830 APICALIS, Baly, l.c. (3) I. p. 617; l.c. (3) IV. p. 284. Dorey.
1831 BICINCTA, Guér. Voy. Coquille, Zool. II. 1830, Col. p. 145.
immaculicollis, Blanch. Voy. Pole Sud, IV. Zool. t. 18, f. 19.
Dorey.
1832 CYANIPES, Fabr. Syst. Ent. p. 98; Oliv. Ent. V. p. 541, t. 4,
f. 50; Blanch. Voy. Pole Sud, IV. Zool. p. 330, t. 18,
f. 18; Baly, Trans. Ent. Soc. Lond. (1) III. 1855, p. 172;
(3) I. 1863, p. 282. New Guinea.
1833 VIOLACEIPENNIS, Baly, Journ. of Ent. I. 1862, p. 292. Dorey.

AUSTRALICA. Chevrolat.

- 1834 VIOLACEA, Jacoby, Proc. Zool. Lond. 1880, p. 171, t. 28, f. 2.
New Guinea.

STETHOMELA. Baly.

- 1835 BASALIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 25.
Mount Epa, New Guinea.
1836 CHAPUISI, Jacoby, l.c. p. 29. Fly River; Ramoi.
1837 GRANDIS, Baly, Trans. Ent. Soc. Lond. (3) IV. 1865, p. 292.
Dorey.
1838 PALLIATA, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 26.
Wokan, Aru.
1839 PAPPANA, Jacoby, l.c. p. 27. Fly River, Katow.
1840 QUADRIPUSTULATA, Baly, Trans. Ent. Soc. Lond. (3) IV. 1865,
p. 294. Mysol.
1841 SCINTILLANS, Baly, Journ. of Ent. I. 1861, p. 294; Trans.
Ent. Soc. Lond. (3) IV. 1865, p. 291. Dorey.

- 1842 SEMIVIOLEACEA, Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 30. Fly River.
- 1843 VARIABILIS, Baly, Trans. Ent. Soc. Lond. (3) I. 1863, p. 622 ;
Baly, Phytoph. 1867, p. 293. Mysol.
- 1844 VARIANS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 28.
Yule Island.
- AUGOMELA. Baly.
- 1845 DIVES, Baly, Trans. Ent. Soc. Lond. (1) V. 1859, p. 157 ;
Phytoph. p. 294. New Guinea.
- PAROPSIS. Olivier.
- 1846 IOPTERA, Baly, Phytoph. Trans. Ent. Soc. Lond. (3) IV.
1867, p. 279. Mysol ; Dorey.
- 1847 NIGRIPICTA, Baly, l.c. p. 279. Aru.
- 1848 WALLACEI, Baly, l.c. p. 280. Dorey.

Sub-Family HALTICIDES.

NISOTRA. Baly.

- 1849 OBLITERATA, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 35.
Hatam, Andai, Katow.
- PODAGRICA. Foudras.
- 1850 PSYCHE, Baly, Trans. Ent. Soc. Lond. 1876, p. 444.
New Guinea.
- 1851 TARSATA, Baly, l.c. p. 443. Dorey.

ARSIPODA. Erichson.

- 1852 CHRYSIS, Oliv. Ent. VI. p. 698, t. 3, f. 54.
azurea, Boisd. Voy. Astrol. Col. 1835, p. 561 ; Latr. Dej.
Cat. 3 ed. p. 415 ; Montrouz. Ann. Soc. Agr. Lyon, VII.
1855, p. 72. New Guinea.
- 1853 MÖERENS, Baly, Trans. Ent. Soc. Lond. 1877, p. 285.
Mysol, New Guinea.
- 1854 WALLACEI, Baly, l.c. p. 285. New Guinea.

CREPIDODERA. Chevrolat.

- 1855 DUBIOSA, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 67.
Sorong, Hatam, &c.
1856 GESTROI, Jacoby, l.c. p. 67. Fly River.

HALTICA. Geoffroy.

- 1857 CHEVROLATI, Guér. Voy. Coquille, Zool. 1830, II. p. 152;
Jc. Règn. Anim. p. 307, t. 49 bis. f. 13. New Guinea.

PHILOCALIS. Dejean.

- 1858 PULCHRA, Boisd. Voy. Astrol. Col. 1835, p. 552.
New Guinea.

APHTHONA. Chevrolat.

- 1859 PAPUENSIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 63.
Yule Island.

PHYLLOTRETA. Foudras.

- 1860 NIGRICORNIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 61.
Fly River.
1861 SUTURALIS, Jacoby, l.c. p. 62. Yule Island.

JOBIA. Kirsch.

- 1862 ATRA, Kirsch, Mittheil. Zool. Mus. Dresd. II. 1877, p. 159.
New Guinea, Jobi.

LYPNEA. Baly.

- 1863 FLAVA, Baly, Trans. Ent. Soc. Lond. 1876, p. 446.
New Guinea.

SEBAETHE. Baly.

- 1864 VIOLACEIPENNIS, Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 50. Ramoi, New Guinea.

SUTREA. Baly.

- 1865 ALBOFASCIATA, Baly, Trans. Ent. Soc. Lond. 1876, p. 437.
Dorey.
1866 BALYI, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 43.
Fly River.

- 1867 BIPUSTULATA, Baly, Trans. Ent. Soc. Lond. 1876, p. 438.
Dorey.
- 1868 COLLARIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 44.
Hatam.
- 1869 DIMIDIATIPENNIS, Jacoby, l.c. p. 44. Fly River.
- 1870 ELEGANS, Baly, Trans. Ent. Soc. Lond. 1876, p. 436.
New Guinea.
- 1871 HEXASPILOTA, Baly, l.c. p. 436. Dorey.
- 1872 VIOLACEIPENNIS, Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 45. New Guinea.
- 1873 WALLACEI, Baly, Trans. Ent. Soc. Lond. 1876, p. 438.
Dorey.

XENIDEA. Baly.

- 1874 ALTERNATA, Baly, Journ. of Ent. I. 1862, p. 454, t. 21, f. 4.
New Guinea.

ARGOPUS. Fischer.

- 1875 CHALYBEIPENNIS, Boisd. Voy. Astrol. Col. 1835, p. 561.
Waigiou.

PODONTIA. Dalman.

- 1876 BASALIS, Clark, Journ. of Ent. I. 1862, p. 452. Mysol.

PSYLLIODES. Latreille.

- 1877 COGNATA, (Baly?) Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 64.
Sorong, New Guinea.

OPHRIDA. Chapuis.

- 1878 NIGROMACULATA, Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 33. Fly River.
- 1879 STRIATIPENNIS, l.c. p. 32. Fly River.

ARGOPISTES. Motschulsky.

- 1880 INSULARIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 56.
Yule Island, &c.

EUCYCLA. Baly.

- 1881 FLAVOMACULATA, Jacoby, Ann. Mus. Genov. (2) II. 1885,
p. 57. Katow, New Guinea.
1882 MALAYANA, Jacoby, l.c. p. 58. Fly River.

ENNEAMERA. Harold.

- 1883 LÆVIPENNIS, Jacoby, Ann. Mus. Genov. (2) II. 1885, p. 47.
Wokan, Aru.

Sub-Family GALERUCIDES.

OIDES. Weber.

- 1884 BASALIS, Guér. Voy. Coquille, p. 146; Jc. t. 49, f. 1; Boisd.
Voy. Astrol. Col. 1835, p. 545. New Guinea.
1885 BIFASCIATA, Blanch. Voy. Pole Sud, IV. p. 343, t. 19, f. 17.
New Guinea.
1886 BORREI, Duviv. C.R. Ent. Belg. XXVII. 1883, p. clxi.
New Guinea.
1887 CONCOLOR, Blanch. Voy. Pole Sud, IV. p. 338, t. 19, f. 11.
New Guinea.
1888 DECEMGUTTATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 46. New Guinea.
1889 DICHROA, Blanch. Voy. Pole Sud, IV. p. 341, t. 19, f. 15.
New Guinea.
1890 DIMIDIATA, Blanch. l.c. p. 340, t. 19, f. 14. New Guinea.
1891 JACOBYI, Duviv. C.R. Ent. Belg. XXVII. 1883, p. clx.
New Guinea.
1892 LIMBATA, Blanch. Voy. Pole Sud, IV. p. 339, t. 19, f. 12.
New Guinea.
1893 LINTEATA, Blanch. l.c. p. 336, t. 19, f. 8. New Guinea.
1894 MARGINEGUTTATA, Blanch. l.c. p. 343, t. 19, f. 18.
New Guinea.
1895 MELANOCEPHALA, Boisd. Voy. Astrol. Col. p. 545.
New Guinea.
1896 NIGRICOLLIS, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 48.
New Guinea.

- 1897 *NIGRIVENTRIS*, Blanch. Voy. Pole Sud, IV. p. 339, t. 19,
f. 13. New Guinea.
- 1898 *NIGROPLAGIATA*, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 47. New Guinea.
- 1899 *ORNATA*, Baly, Journ. of Ent. I. 1861, p. 295. New Guinea.
- 1900 *PERPLEXA*, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 45.
New Guinea.
- 1901 *POSTICALIS*, Guér. Voy. Coquille, Zool. 1830, II. p. 147.
Dorey.
- 1902 *QUADRIFASCIATA*, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 41. New Guinea.
- 1903 *QUADRINOTATA*, Blanch. Voy. Pole Sud, IV. p. 336, t. 19,
f. 9. New Guinea.
- 1904 *QUINQUELINEATA*, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 42. New Guinea.
- 1905 *RUBRA*, Blanch. Voy. Pole Sud, IV. p. 342, t. 19, f. 16.
New Guinea.
- 1906 *SEXFASCIATA*, Blanch. l.c. p. 335, t. 19, f. 7. New Guinea.
- 1907 *SUBÆNEA*, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 44.
New Guinea.
- 1908 *TERMINATA*, Jacoby, l.c. p. 45. New Guinea.

CALLIPEPLA. Dejean.

- 1909 *POSTICA*, Boisd. Voy. Astrol. Col. 135, p. 546, t. 8, f. 12.
New Guinea.
- 1910 *SEXSIGNATA*, Boisd. l.c. p. 551. New Guinea.

AULACOPHORA. Chevrolat.

- 1911 *ALBOFASCIATA*, Baly, Journ. Linn. Soc. Lond. XX. 1886,
p. 6. Dorey.
- 1912 *APICALIS*, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 54.
New Guinea.
- 1913 *ATRIPENNIS*, Baly, Journ. Linn. Soc. Lond. XX. 1886, p. 8.
Key Island.
- 1914 *BOISDUVALI*, Baly, l.c. p. 10. New Guinea.

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- 1915 CIRCUMDATA, Blanch. Voy. Pole Sud, Zool. IV. 1853, p. 347,
t. 18, f. 20. Triton Bay, New Guinea.
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f. 7.
similis, Oliv. Ent. VI. p. 624, t. 2, f. 25. New Guinea.
- 1917 CORNUTA, Baly, Cist. Ent. II. p. 445; Journ. Linn. Soc.
Lond. XX. 1886, p. 15. Waigiou, New Guinea.
- 1918 CYANOPTERA, Boisd. Voy. Astrol. Col. p. 547. New Guinea.
- 1919 DORSALIS, Boisd. l.c. p. 554, t. 8, f. 13.
dorsata, d'Urville, Dej. Cat. 3 ed. p. 402. Dorey.
- 1920 EXCISA, Baly, Journ. Linn. Soc. Lond. XX. 1886, p. 25.
New Guinea.
- 1921 FRAUDULENTA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 52. New Guinea.
- 1922 INSTABILIS, Baly, Journ. Linn. Soc. Lond. XX. 1886, p. 10.
Mysol.
- 1923 INSULARIS, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 55.
New Guinea.
- 1924 MELANOPUS, Blanch. Voy. Pole Sud, p. 346, t. 19, f. 20;
Baly, Journ. Linn. Soc. XX. 1886, p. 5. Dorey.
- 1925 MONTROUZIERI, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 54.
Duke of York Island.
- 1926 POSTICALIS, Guér. Voy. Coquille, Zool. 1830, II. Col. p. 150;
Fairm. Ann. Ent. Belg. XXVII. 1883, p. 54.
Duke of York Island.
- 1927 PROPINQUA, Baly, Journ. Linn. Soc. Lond. XX. 1886, p. 11.
Dorey, Key, &c.
- 1928 PYGIDIALIS, Baly, l.c. p. 7. Aru, Key, Dorey.
- 1929 RUBROZONATA, Blanch. Voy. Pole Sud, Zool. IV. 1853,
p. 345, t. 19, f. 19; Baly, Journ. Linn. Soc. Lond. XX.
1886, p. 11. Dorey.
- 1930 SEMILIMBATA, Baly, l.c. p. 24. Dorey.
- 1931 VICINA, Boisd. Voy. Astrol. Col. p. 559. New Guinea.
- 1932 VIRIDIPENNIS, Boisd. l.c. p. 559. New Guinea.

TRIAPLATYS. Fairmaire.

- 1933 QUADRIPARTITA, Fairm. Ann. Ent. Belg. XXVII. 1883,
p. 56. New Britain.

MALACOTHERIA. Fairmaire.

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Duke of York Island.

PHYLLOBROTICA. Redtenbacher.

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New Guinea.

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- 1937 JACOBYI, Baly, Trans. Ent. Soc. Lond. 1886, p. 30. Mysol.

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New Guinea.

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Dorey.

ATYSA. Baly.

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1949 FUNESTA, Baly, l.c. p. 33.

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Key Island.

1952 TERMINALIS, Baly, l.c. (3) II. 1864, p. 239.

Mysol.

GALERUCELLA. Crotch.

1953 LATERIMACULATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
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Aru.

1955 WALLACEI, Baly, l.c. p. 34.

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NEODRANA. Jacoby.

1956 SEMIFULVA, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 83.

New Guinea.

SASTRA. Baly.

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1964 PLACIDA, Baly, Ann. Nat. Hist. (3) XVI. 1865, p. 254 ;
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Mysol, New Guinea.

DIORHABDA. Weise.

1965 YULENSIS, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 107.

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- 1969 DIMIDIATIPENNIS, Baly, Ann. Nat. Hist. (3) XV. 1865,
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MOMAEA. Baly.

- 1972 FLAVOMARGINATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
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- 1974 ALBOFASCIATA, Baly, Trans. Ent. Soc. Lond. 1886, p. 36.
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HOPLASOMA. Jacoby.

- 1978 ORNATA, Baly, Trans. Ent. Soc. Lond. 1886, p. 27. Mysol.

MICROLEPTA. Jacoby.

- 1979 CÆRULEIPENNIS, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 66. New Guinea.

MENIPPUS. Clark.

- 1980 NIGROCÆRULEA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
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BUPHONIDA. Baly.

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Mysol.

SOLENIA. Jacoby.

- 1982 ALBERTISI, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 79.
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CYNORTA. Baly.

- 1984 UNICOLOR, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 81.
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MONOLEPTA. Erichson.

- 1985 ARGUTULA, Boisd. Voy. Astrol. Col. 1835, p. 547.
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New Guinea.
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p. 95. New Guinea.
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New Guinea.
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1992 SCUTELLATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 93.
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1993 SUBSULCATA, Boisd. Voy. Astrol. Col. 1835, p. 556.
Waigiou.

NEOLEPTA. Jacoby.

- 1994 UNIFASCIATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 100. New Guinea.

CALLIMA. Chapuis.

- 1995 CANDEZEI, Chap. Gen. Col. XI. 1875, p. 241, note.
New Guinea.

CANDEZEA. Chapuis.

- 1996 BIMACULATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886,
p. 115. New Guinea.

YULENIA. Jacoby.

- 1997 MARGINATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 117.
New Guinea.

HYPHAENIA. Baly.

- 1998 DISCOIDALIS, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 119.
New Guinea.

CAELOCRANIA. Jacoby.

- 1999 TERMINATA, Jacoby, Ann. Mus. Genov. (2) IV. 1886, p. 120.
New Guinea.

Sub-Family HISPIDES.

HISPODONTA. Baly.

- 2000 CHAPUISI, Gestro, Ann. Mus. Genov. (2) II. 1885, p. 156.
Andai.

OXYCEPHALA. Guérin.

- 2001 ALBERTISI, Gestro, Ann. Mus. Genov. (2) II. 1885, p. 161.
Fly River.
- 2002 LATIROSTRIS, Gestro, l.c. p. 160. Fly River.
- 2003 LONGISSIMA, Gestro, l.c. p. 162, fig. Aru.
- 2004 METALLICA, Gestro, l.c. p. 159. Fly River.
- 2005 SPECIOSA, Boisd. Voy. Astrol. Col. 1835, p. 535; Blanch.
Voy. Pole Sud, IV. p. 311, t.-18, f. 5; Guér. Rev. Zool.
1840, p. 333; Gestro, Ann. Mus. Genov. (2) II. 1885,
p. 157. New Guinea, Salwatty, Aru.
- 2006 TRIPARTITA, Fairm. Ann. Ent. Belg. XXVII. 2, 1883,
p. 54. Duke of York Island.

GONOPHORA. Baly.

- 2007 CRASSIPES, Baly, Ann. Nat. Hist. (5) I. 1878, p. 43.
Key Island.

MONOCHIRUS. Chapuis.

- 2008 MULTISPINOSUS, Germ. Linn. Ent. III. 1848, p. 246; Gestro,
Ann. Mus. Genov. (2) II. 1885, p. 173. Yule Island.

HISPA. Linné.

2009 CINCTA, Gestro, Ann. Mus. Genov. (2) II. 1885, p. 177.

Andai.

2010 FABRICII, Guér. Voy. Coquille, 1830, II. p. 140; Gestro, Ann. Mus. Genov. (2) II. 1885, p. 174.

Northern New Guinea.

Sub-Family CASSIDIDES.

ASPIDOMORPHA. Hope.

2011 ADHÆRENS, Weber, Obs. Ent. I. p. 51; Fabr. Syst. El. I. p. 400; Blanch. Voy. Pole Sud, IV. p. 318, t. 18, f. 11; Bohem. Mon. II. p. 264. New Guinea.

2012 DIVISA, Boisd. Voy. Astrol. Col. p. 540; Bohem. Mon. II. p. 282. New Guinea.

2013 FLAVODORSATA, Wagener, MT. Münch. Ent. Ver. V. 1881, p. 48. New Guinea.

2014 GUERINII, Boisd. Voy. Astrol. Col. p. 538. New Guinea.

2015 LATERAMOSA, Wagener, MT. Münch, Ent. Ver. V. 1881, p. 48. New Guinea.

2016 NOVÆGUINEENSIS, Boisd. Voy. Astrol. Col. p. 537; Bohem. Mon. II. p. 307. New Guinea.

astrolabiana, Blanch. Voy. Pole Sud, IV. p. 319, t. 18, f. 13. New Guinea.

2017 SANCTÆ-CRUCIS, Fabr. Ent. Syst. IV. App. p. 446; Bohem. Mon. II. p. 287, t. 6, f. B; Macleay, Proc. Linn. Soc. N.S.W. IX. 1884, p. 709. Macleay Coast.

2018 SOCIA, Bohem. Cat. Brit. Mus. IX. 1856, p. 114.

New Guinea, Duke of York Island.

CASSIDA. Linné.

2019 PERMODICA, Bohem. Mon. IV. p. 349. New Guinea.

LACCOPTERA. Boheman.

2020 IMPRESSA, Blanch. Voy. Pole Sud, IV. p. 322, t. 18, f. 15; Bohem. Mon. III. p. 72. New Guinea.

COPTOCYCLA. Boheman

- 2021 CIRCUMDATA, Herbst, Käf. VIII. p. 268, t. 132, f. 11 ; Oliv.
Ent. VI. 97, p. 967, t. 6, f. 93 ; Bohem. Mon. III. p. 279 ;
Fairm. Ann. Ent. Belg. XXVII. 1883, p. 57.
New Britain.
- 2022 DIOMMA, Boisd. Voy. Astrol. Col. p. 540 ; Bohem. Mon. III.
p. 213. New Guinea.
- 2023 RADIATA, Bohem. Mon. III. p. 389. New Guinea.
- 2024 SEXGUTTATA, Boisd. Voy. Astrol. Col. p. 539 ; Bohem. Mon.
III. p. 240. New Guinea, Duke of York Island.

Family LANGURIIDÆ.

LANGURIA. Latreille.

- 2025 BECCARII, Harold, Mitth. Münch. Ent. Ver. 1879, III.
p. 66. New Guinea.
- 2026 CROTCHE, Harold, l.c. p. 75. New Guinea.
- 2027 FUTILIS, Harold, l.c. p. 90. New Guinea.
- 2028 GUINEENSIS, Harold, l.c. p. 94. New Guinea.
- 2029 INSULARIS, Harold, l.c. p. 86. New Guinea.
- 2030 MANICATA, Harold, l.c. p. 76. New Guinea.
- 2031 PAPUANA, Harold, l.c. p. 68. New Guinea.
- 2032 PAPUENSIS, Crotch, Revis. Cist. Ent. XIII. 1876, p. 10.
Dorey.
- 2033 PAVIDA, Harold, Mitth. Münch. Ent. Ver. 1879, III p. 68.
New Guinea.
- 2034 SERRATULA, Harold, l.c. p. 77. New Guinea.
- 2035 SERVULA, Harold, l.c. p. 91. New Guinea.
- 2036 VERTICALIS, Harold, l.c. p. 89. New Guinea.
- 2037 VIOLACEIPENNIS, Harold, l.c. p. 68. New Guinea.

Family EROTYLIDÆ.

ENCAUSTES. Lacordaire.

- 2038 HUMERALIS, Crotch, Revis. Cist. Ent. XIII. 1876, p. 102 ;
Fairm. Ann. Ent. Belg. XXVII. 1883, p. 57.
New Guinea, New Britain.

EPISCAPHULA. Crotch.

- 2039 AUSTRALIS, Boisd. Voy. Astrol. Col. 1835, p. 146 ; Fairm.
Ann. Ent. Belg. XXVII. 1883, p. 57 Mioko.
2040 SUBLÆVIS, Crotch, Revis. Cist. Ent. XIII. 1876, p. 39
Waigiou.
2041 THORACICA, Crotch, l.c. p. 36. Waigiou.
2042 XANTHOSTICTA, Crotch, l.c. p. 35. New Guinea.

THALLIS. Erichson.

- 2043 HUMERALIS, Crotch, Revis. Cist. Ent. XIII. 1876, p. 26.
Waigiou.
2044 WALLACEI, Crotch, l.c. p. 24. Aru.

NEOBLYTUS. Bedel.

- 2045 ÆRATUS, Bedel, Ann. Mus. Genov. XVIII. 1882, p. 438.
New Guinea.

AULACOCILUS. Lacordaire.

- 2046 OCEANICUS, Ann. Ent. Fr. (5) II. 1872, p. 405. New Guinea.

Family ENDOMYCHIDÆ.

ENCYMON. Gerstächer.

- 2047 ANGULATUS, Gorham, Endom. Recit. 1873, p. 39 ; Ann. Mus.
Genov. (2) II. 1885, p. 520. Aru, Ramoi, Fly River, &c.
2048 BIPUSTULATUS, Gorham, Endom. Recit. 1873, p. 38. Aru.
2049 IMMACULATUS, Montrouz. Ann. Sec. Agr. Lyon, VII. 1, 1855,
p. 74 ; Gorham, Ann. Mus. Genov. (2) II. 1885, p. 518 ;
Fairm. Ann. Ent. Belg. XXVII. 1883, p. 57.
Ramoi, Fly River, New Britain.

- 2050 RUFICOLLIS, Kirsch, Mittheil Zool. Mus. Dresd. II.; Gorham,
Ann. Mus. Genov. (2) II. 1885, p. 510.

Ramoi, Fly River, &c.

STENOTARSUS. Perty.

- 2051 ALBERTISI, Gorham, Ann. Mus. Genov. (2) II. 1885, p. 527.
Andai.

BECCARIA. Gorham.

- 2052 PAPUENSIS, Gorham, Ann. Mus. Genov. (2) II. 1885, p. 522.

Family COCCINELLIDÆ.

HYSIA. Mulsant.

- 2053 ENDOMYCINA, Boisd. Voy. Astrol. Col. p. 603; Mulsant, Spec.
Col. Trim. Sécur. 1851, p. 47. New Guinea.

COCCINELLA. Linné.

- 2054 TRANSVERSALIS, Fabr. Spec. Ins. I. 1781, p. 97.
contempta, Dej. Cat. 3 ed. p. 457. New Guinea.

HALYZIA. Mulsant.

- 2055 FUNEREA, Crotch, Revis. Coccinell. 1874, p. 132. Dorey.

LEIS. Mulsant.

- 2056 LAPEYROUSEI, Boisd. Voy. Astrol. Col. 1835, p. 589, t. 8. f. 20.
New Guinea.

- 2057 PAPUENSIS, Crotch, Revis. 1874, p. 121.
var. *suffusa*, Crotch, l.c. 121. New Guinea.

CHILOCORUS. Leach.

- 2058 MALASLÆ, Crotch, Revis. 1874, p. 187. Mysol.

ASPIDIMERUS. Mulsant.

- 2059 MALASLÆ, Crotch, Revis. 1874, p. 203. Mysol.

CRYPTOLÆMUS. Mulsant.

- 2060 AFFINIS, Crotch, Revis. 1874, p. 202. Dorey.

ORTALIA. Mulsant.

- 2061 WALLACEI, Crotch, Revis. 1874, p. 276. Salwatty.

RHYNCHORTALIA. Crotch.

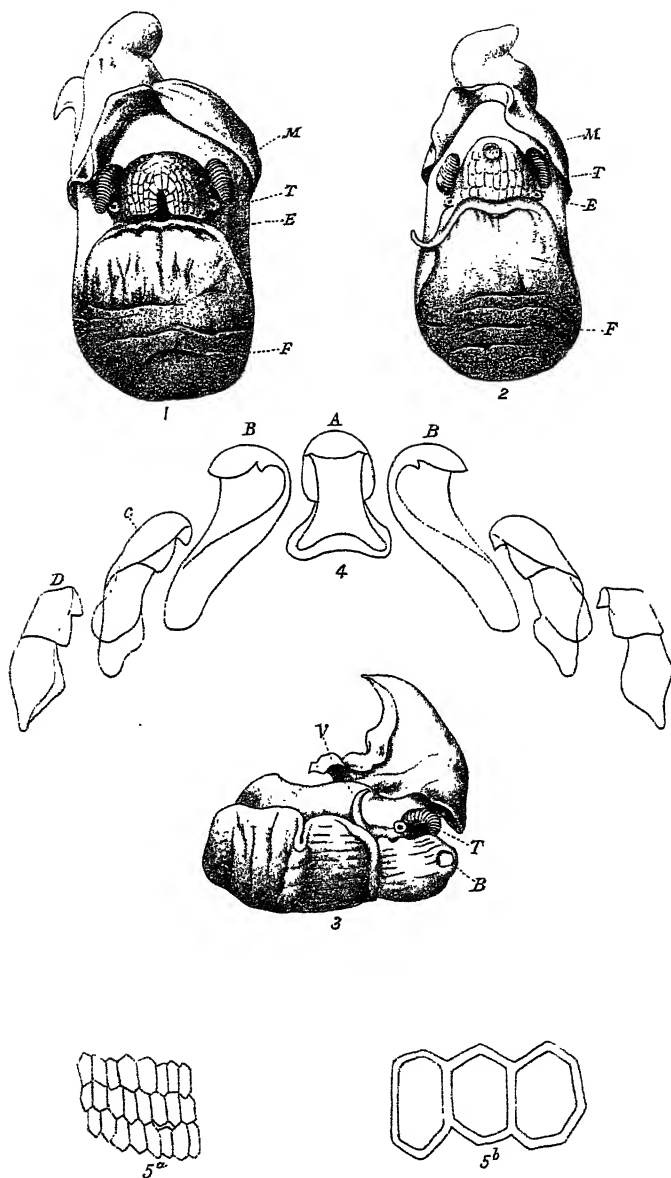
- 2062 INSUETA, Crotch, Revis. 1874, p. 278.

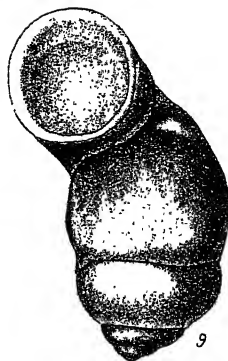
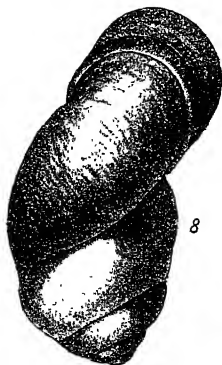
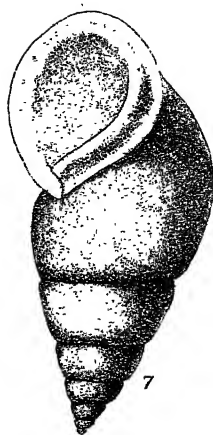
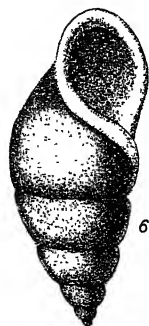
EPILACHNA. Chevrolat.

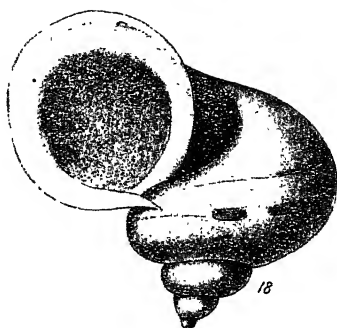
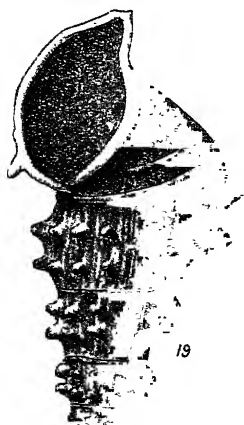
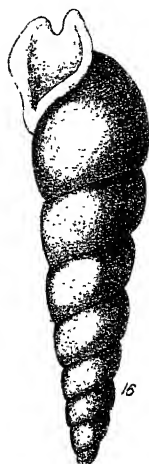
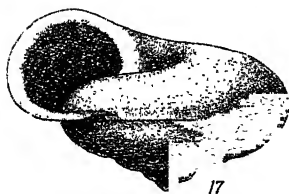
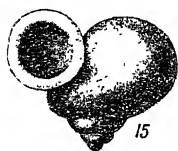
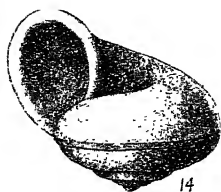
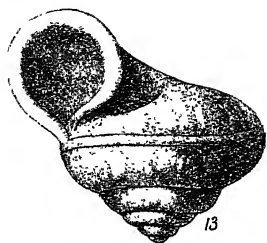
- 2063 DORYCA, Boisd. Voy. Astrol. Col. 1835, p. 597, t. 8. f. 21 ;
Muls. Spec. p. 761. New Guinea.
- 2064 ENNEASTICTA, Muls. Spec. p. 769 ; Fairm. Ann. Ent. Belg.
XXVII. 1883, p. 57. Duke of York Island.
- 2065 HÆMATOMELÆNA, Boisd. Voy. Astrol. Col. 1835, p. 598, t. 8.
f. 21 ; Muls. Spec. p. 726. New Guinea.
- 2066 PAPUENSIS, Crotch, Revis. 1874, p. 79. New Guinea.
- 2067 SIGNATIPENNIS, Boisd. Voy. Astrol. Col. 1835, p. 593 ; Muls.
Spec. p. 467. New Guinea.
- 2068 SOBRINA, Harold, Col. Heft XIV. p. 213.
persimilis, Crotch, Revis. 1874, p. 79. Salwatty.
- 2069 UNDECIMVARIOLATA, Boisd. Voy. Astrol. Col. 1835, p. 591 ;
Muls. Spec. p. 780.
var. *Diardi* Muls. Spec. p. 782.
Triton Bay, New Guinea ; Duke of York Island.
- 2070 VIGINTIOCTOPUNCTATA, Fabr. Syst. Ent. 1775, p. 84.
multipunctata, Muls. Spec. 1874, p. 836. New Guinea.
- 2071 VIGINTISEXPUNCTATA, Boisd. Voy. Astrol. Col. 1835, p. 590 ;
Muls. Spec. p. 838 ; Dej. Cat. 3 ed. p. 460. New Guinea.

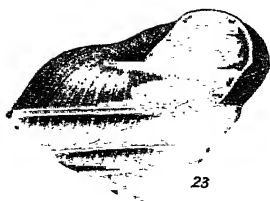
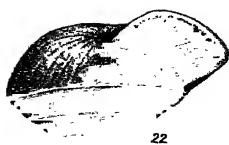
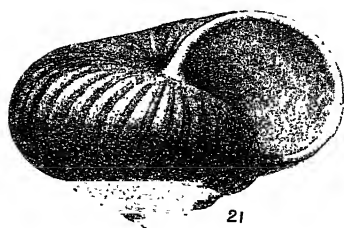
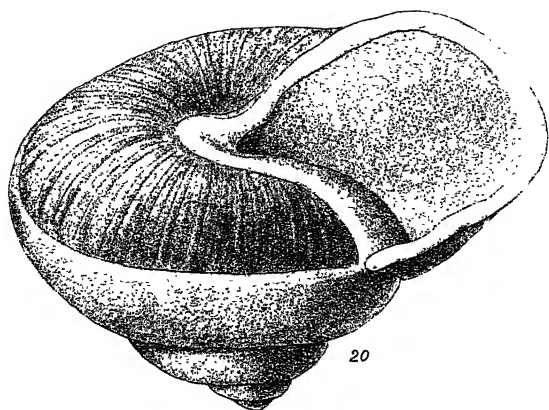
CÆLOPHORA. Mulsant.

- 2072 ARUENSIS, Crotch, Revis. 1874, p. 150. Aru.
- 2073 PULCHRA, Crotch, l.c. p. 150. Waigiou.
- 2074 RUBRO-NIGRA, Fairm. Ann. Ent. Belg. XXVII. 1883, p. 58.
Duke of York Island.
- 2075 WALLACEI, Crotch, Revis. 1874, p. 156. Key Island.









MALAYSIAN LAND AND FRESHWATER MOLLUSCA.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., HON. MEM.
ROY. AS. SOC. (STRAITS BRANCH).

(PLATES XXVII.-XXX.).

DEFINITION OF THE REGION.—The species included in the following list are those indigenous to the Malay Peninsula in the states south of Keddah and the Indian Archipelago, exclusive of New Guinea. With the exception of the arbitrary line dividing the Malay Peninsula, the limits of this region form a province in natural history in the molluscan sub-kingdom. The reason for excluding New Guinea is that its fauna seems to belong more to the Pacific and Australian regions. The Philippine Islands are not included, because they form of themselves a peculiar province with very marked features, entitling them to separate consideration.

The physical geography of the Malaysian region is another reason for considering its pulmonate mollusca separately. The region consists of an immense number of islands of varying sizes, from mere barren granite rocks to continental islands like Sumatra and Borneo. All those that are of any size are densely clothed with vegetation. The climate is very hot, moist, and varies but little. Granite is the prevailing rock, with overlying palæozoic strata and a few outliers of Devonian limestone. There are also in Borneo and Sumatra rather extensive developments of carbonaceous sandstone and a few patches of tertiary limestone. The south-east portion of the region is made up exclusively of modern volcanic rocks.

It is known that climate, vegetation, and soil have all powerful influences in the development of the land mollusca, which live on decayed leaves and vegetation, flourishing best amid moisture and

heat. All these conditions are found pre-eminently in the region I have specified, and perhaps in no country of the world are they more favourably united for the development of terrestrial mollusca.

Soil also has a remarkable influence. Some species prefer granite formations; but the predilection of land mollusca for limestone rocks is very striking. In the Malay Peninsula there is quite a number of small isolated limestone outliers in the form of hills and table-lands, mostly of a precipitous character. These are all distinguished by an abundance of genera and species of land-shells. The restricted habitat of some is most remarkable, and each patch of limestone seems to have its own species. It has been remarked by various naturalists how few means of dispersal the land-shells have, and thus it is that we find each island with its own fauna, no matter how small it is. Some of these species are peculiar and exceptional types. It must be admitted, however, that some types are very wide-spread, such for instance, as the forms of which *Helix citrina* L., and *Bulimus perversus* L., are the types.

It is highly probable that we have in the Malay Peninsula and its islands the remains of a very ancient continent. None of the younger formations have any place except in Sumatra and Borneo. At any rate there are no rocks which would justify the supposition that the region has been completely submerged within modern geological times. For these reasons, therefore, we have in the molluscan sub-kingdom a fauna of great antiquity. The circumstances also favour the restriction of species, because the land is so broken up into islands. Thus specific peculiarities become propagated and restricted. It may be said, in keeping with this, that though the species or varieties of the region are very numerous, yet the types are comparatively few. I take here the opportunity of noting that though I give a list of all the species enumerated by various authors known to me, I am very far from endorsing their views as to the value of the specific distinctions in any case. Probably the number of species, and even the genera, will admit of extensive reduction hereafter. In

looking through a large collection with every gradation of shape and colour between one species and another, one cannot help being struck with the slender evidence on which some species rest. One is inclined to say that the species are comparatively few, but the variations are great in extent and endless in number.

Nevertheless, there are certain peculiar genera which stamp a character on the region, besides certain abnormal species. The *facies* of the region is Indian. All traces of African influences have disappeared. There is no *Achatina*, few *Pupas*, whilst *Cyclostoma* is beginning to take a subordinate place. Amongst the Cyclophoridae we find peculiar though wide-spread types; and amongst the Helicidae unmistakable uniformity. The individuals have all marked characters, so that a small amount of experience suffices to enable us to tell at a glance whether any individual shell is a member of the Malayan fauna.

There are in the region we are dealing with about 380 known species or varieties of land-shells divisible into the following genera:—*Streptaxis*, *Ennea*, *Vitrina*, *Helicarion*, *Nanina*, *Trochonanina*, *Hyalinia*, *Trochomorpha*, *Patula*, *Helix*, *Cochlostyla*, *Bulimus*, *Bulimina*, *Stenogyra*, *Rhodina*, *Glessula*, *Pupa*, *Hypselostoma*, *Clausilia*, *Cyclotus*, *Opisthoporus*, *Pterocyclos*, *Spiraculum*, *Cyclophorus*, *Leptopoma*, *Alyceus*, *Diplommantina*, *Opisthostoma*, *Pupina*, *Megalomastoma*, *Hybocystis*, *Georissa*. Of these the dominant genera are *Nanina*, *Helix*, *Cyclophorus*, *Bulimus*, and *Clausilia*. And this is the case in the Indian fauna. There is in fact the strongest resemblance between the relative proportion of certain genera in the two provinces; the difference being the complete disappearance from the Malayan Peninsula of *Achatina* and some other African genera. The large predominance of forms of *Helix* resembles India almost to the very number of species. The peculiar form of *Vitrina* distinguished as *Nanina*, but with slender claims to a generic position, is a feature shared by Ceylon, and to some extent by the Philippine Islands. *Nanina* is a thin, depressed, umbilicated shell, with a keel at the periphery, highly polished and with a tendency to bi-partite colouring.

Some of the peculiar genera of this region have extraordinary organs which are not seen elsewhere. Thus *Opisthoporus* is a depressed shell furnished with a little open tube behind the mouth. *Pterocyclos* has an almost similar tube formed by a notch in the peristome at its junction with the superior whorl, an arrangement which is slightly modified in an allied genus named *Spiraculum*. *Alycaeus* has the last whorl swollen, constricted and strongly twisted near the mouth. All these species have peculiar opercula composed of a calcareous spiral series of concentric plates. In the family Pupininae there are the strongest modifications of the last whorl which becomes twisted and constricted in the most erratic manner. In *Opisthostoma* it is elevated vertically in the air like an elephant's trunk. In *Hybocystis* we have a very peculiar form of land-shell, of which a full description is given at the end of the list. It is an approach to *Megalomastoma*, and may be said to be confined to Burmah and the Malay Peninsula.

As the limits of the region here dealt with are so little explored, no such things as sub-provinces can be made, unless it be in the way of considering each island a sub-province in itself. It is obvious to any one who considers the size and extent of any of the islands, that only a very small portion of them can have been well explored for their molluscan fauna. The total number of known species or varieties, amounting as it does to scarcely 400, can only be considered as an instalment of the actual census. The large island of Borneo alone might be expected to furnish such a number, when we remember how the climate, soil, and vegetation of this region favour the development of the molluscan fauna. Yet the species of Borneo can scarcely be said to be known at all.

In dealing with the genera and species of the various authors, it has already been stated that the specific or generic value in any individual case is a matter for which the authors themselves are alone responsible. Yet it must be borne in mind that the difficulty of dealing with some of the larger genera renders sub-division of some kind absolutely necessary. Thus in the immense genus

Helix it is no use to catalogue species without adopting sectional divisions, which has been done in the present list. It must be admitted that they are not easy to identify, as the features are so feeble, and there is so little to go upon. Still the sections may be of some assistance, and they are meant to have no higher value in classification.

With the genera it is different, and except in such a case as *Nanina* the divisions are well marked, and can hardly be mistaken one for another. In the smaller genera the features are very pronounced, that is genera small in point of numbers, not of size. I believe it may further be said that all the species of the genera *Trochomorpha*, *Bulimus*, *Cyclotus*, *Cyclophorus* and *Alyceus*, though perhaps not well distinguished from one another, are referable to a type which has certain well-defined geographical limits. With a little experience a species of *Cyclophorus*, for instance from the Malayan Peninsula, could be easily recognized as belonging to the region; but it would require a prolonged familiarity to distinguish between the characteristic types of the various islands, as for instance Java and Sumatra. The Bornean shells are easily recognized, though there are strong resemblances to the types of the Philippine Islands.

Amongst the shells enumerated there is no foreign element. No molluscan animals, as far as it is known, have been introduced from foreign regions, and become naturalized in the region now described; but the large introduction of European and Chinese plants will alter this state of things before long, if it has not done so already.

The following list has been taken from various sources. No special study has ever been made of the land mollusca of the Malayan Archipelago. But owing to the labours of Pfeiffer and Albers, the task of compiling this list has been very much facilitated. The whole references in the case of every species have not been given. As far as possible the references are made to three or four of the most easily accessible works, where more than one author has given a description. The work of Pfeiffer

("Monographia Heliceorum Viventium," 8 vols.), is taken as the standard, but corrected according to his most recent determinations of species before his decease as contained in "Nomenclator Heliceorum Viventium." These works with his "Monographia Pneumonopomorum Viventium," may be said to contain nearly all that has been done in this department of natural science. All that one requires in addition are the essays of Nevill, Benson, De Morgan, von Möllendorff and Hungerford, and these are principally contained in the Journal of the Royal Asiatic Society, Calcutta branch.

To facilitate reference, a catalogue of works, mentioning species quoted in the list, is given. It is not by any means intended as an exhaustive bibliography of the subject, but it is hoped that no author is omitted who has described any Malayan land shell. It may be necessary to add that I have not been able to verify the references of every species, which of course would impose a vast amount of labour, and enormously increase the time required for the preparation of the catalogue. But in a great many instances, perhaps the majority, I have consulted the original authors especially in the case of the older conchologists.

It should be mentioned that Pfeiffer's nomenclature of the families has been adopted, following also his orthography.

LAND MOLLUSCA.

Family STREPTAXIDÆ.

1. STREPTAXIS, Gray, 1837, Loudon's Magazine, n.s. I. p. 484.

Shell oval or oblong, in the young state sub-hemispherical, deeply umbilicate, irregular and oblique from the lower whorls which rapidly increase in size, receding from the axis of the upper. Near the close of the penultimate whorl the umbilicus is compressed by a return to the original axis. .

Animal heliciform and like the genus *Anostoma*.

Mr. Gray established this genus for species manifesting a twist in the axis, or an irregular deviation in the disposition of the whorls, causing an unsymmetrical spiral. He divides them into many groups amongst which he includes a species of *Pupa*.

STREPTAXIS CONOIDEUS, Pfr. Mon. Hel. IV. p. 329.

Keddah State, Malay Peninsula.

S. PLUSSENSIS, De Morgan, Le Naturaliste, VII. 1885, No. 9, p. 68; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 299.

Mt. Chekel, River Plus, Perak, Malay Peninsula.

S. MICHAUI (ENNEA), Crosse and Fischer, Jour. Conch. 1863, pl. 10, fig. 4, p. 357.

Pulo Condor, Gulf of Siam, between east side of Malay Peninsula and Cambodia.

S. BULBULUS (ENNEA), Morelet, Jour. Conch. 1863, pl. 10, fig. 3.

Pulo Condor.

2. *ENNEA*, H. and A. Adams, Gen. Rec. Moll. II. p. 171.

Shell slightly rimate, sub-cylindrical; apex obtuse, smooth, shining, hyaline; whorls flattened, the last narrow, sulcated externally in the middle, lamellate within, with a strong plait parallel to the columella; aperture sub-circular; parietal lamella extending inwards and situated close to the right margin; peristome expanded, the right margin flexuous, thickened in the middle.

ENNEA PERAKENSIS, Godwin-Austen and Nevill, Proc. Zool. Soc. 1879, p. 735, pl. 59, fig. 2; von Möll. Jour. As. Soc. Beng. l.c. p. 300.

Bukit Pondok, Gapis Pass, Perak.

(N.B.—This is one of the places referred to where Bukit Pondok is spelled Buket Pondong).

E. HUNGERFORDIANA, von Möll. Jour. As. Soc. Bengal, l.c. p. 301.

Bukit Pondok, Perak.

Family VITRINEA.

3. VITRINA, Draparnaud, 1801. Tabl. pp. 33, 98.

Shell dextral, depressed or sub-globose, very thin, pellucid, with a very large last whorl; no umbilicus, columella spiral; aperture large, oblique semi-lunar, without teeth; peristome thin, acute, not continuous.

Animal long, like a slug, and too large for the shell, tail very short; mantle reflected over the shell-margin with posterior right lobe; radula 100 rows of 75; marginal teeth with a single long curved apex.

VITRINA NUCLEOLA, Stol. Jour. As. Soc. Beng. XL. pl. 4, fig. 12; Pfr. Nomencl. Hel. Viv. p. 28, No. 45.

Penang; Prince of Wales Island; Straits of Malacca.

4. HELICARION, Férussac, (1821), Tabl. Syst. des Animaux Mollusques, p. XXXI. and Voy. de Freycinet.

Shell heliciform, round oval, thin, fragile, covered with a very thin periostraca, spire short, whorls few, the last much enlarged, oblong triangular; peristome simple, acute.

Animal like *Vitrina*, but the foot is truncate at its posterior extremity, with a caudal gland like *Arion*.

HELICARION PERMOLLIS, Stol. (as *Vitrina*) Jour. As. Soc. Beng. XLII. pl. 1, fig. 11. = *Vitrina permollis*, Pfr. Mon. Hel. VII. p. 10.

Penang.

H. BORNEENSIS (VITRINA), Pfr. Mon. Hel. IV. p. 793; Nov. Conch. I. pl. 28, figs. 10-12.

Borneo.

A specimen of this shell was seen by me in the collection at Government House, Labuan, but no locality noted.

H. IDÆ (VITRINA), Pfr. Mon. Hel. IV. p. 793; Nov. Conch. I. pl. 28, figs. 13-15.

Celebes.

"One of Pfeiffer's figures shows a narrow orange-brown band, which is not mentioned in the description." Tryon, Man. Conch. I. p. 178. Collected in Celebes by Ida Pfeiffer, the celebrated female traveller. Proc. Zool. Soc. 1856, p. 325.

H. CELEBENSIS (VITRINA), Pfr. Proc. Zool. Soc. 1856, p. 325; Nov. Conch. I. p. 101, No. 172, pl. 28, figs. 16-18.

Also collected in Celebes by Madame Ida Pfeiffer; Pfr. Mon. Hel. IV. p. 793, where the author doubts whether the species should not be referred to the genus *Helix*.

H. SUTURALIS, von Martens (HELICARION), Ostas. Zool. II. 1867, p. 183, pl. 12, fig. 2; pl. 5, fig. 9, a, b, c; Pfr. Mon. Hel. V. p. 17 (*Vitrina*).

Island of Buru, Moluccas.

Sub-globose, very plainly striate at the suture; yellowish-green, with an opaque white zone.

H. LINEOLATUS, von Mart. op. cit. p. 184, pl. 12, fig. 4; Pfr. Mon. Hel. V. p. 17, No. 56.

Java; Sumatra.

H. SERICEUS, von Mart. op. cit. p. 185, pl. 12, fig. 1; (*Vitrina*), Pfr. Mon. Hel. V. p. 18.

Island of Timor.

H. ALBELLUS, von Mart. op. cit. p. 186. = *Helix wonosariensis*, Mousson, in coll. = *Vitrina albella*, Pfr. Mon. Hel. V. p. 18.

Eastern Java, Wonosari. I collected a specimen on the lower slopes of Mount Tengger.

Family VITRINOIDEA.

5. NANINA, Gray, 1834 ; Pfr. Sym. I. p. 5, No. 3.

Shell heliciform, perforated, dextral or sinistral, somewhat depressed, thin, polished, particularly below ; periphery round or keeled, inner lip short, reflected, often covering the umbilicus ; outer lip simple or scarcely reflected.

Animal with two mantle-lobes covering part of front of shell ; foot long, narrow, truncate behind, with a pore like a slit, sometimes with a projection like a horn ; mantle-lobes with power to expand and retract laterally. Over 500 species ; tropical and sub-tropical Africa, Asia, and Oceanica.

N. VIRIDIS, Quoy and Gaimard, (as *Vitrina*), Voy. Astrol. II. p. 138, pl. 11, figs. 16-18 ; Lamarck, Deshayes edit. VII. p. 730, No. 7 ; H. Beck, Index II. p. 4 ; = *Helix viridis*, Pfr. Mon. Hel. I. p. 82.

Island of Celebes in the mountains near Menado, is the reference given by Q. and G. This part of Celebes, it will be remembered, is the only active volcanic portion.

N. LOWI, Issel, = *Hyalina* (?) *lowi*, Issel, Moll. Born. p. 38, pl. 5, figs. 16-18 ; = *Helix lowi* (*Hyalina* ?), Pfr. Mon. Hel. VII. p. 523.

Sarawak, Borneo.

N. TERSA, Issel, (*Macrochlamys*), Moll. Born. p. 36, pl. 5, figs. 1-4 = *Helix* (*Nanina*) *tersa*, Pfr. Mon. Hel. VII. p. 525 = *Nanina tensa*, Pfr. Nomencl. Hel. p. 37, No. 222a.

Borneo.

N. PERLUCIDA, Issel, (*Hyalina* ?), Moll. Born. p. 39, pl. 5, figs. 20-23 = *Helix perlucida*, Pfr. Mon. Hel. VII. p. 526.

Bintulu, Sarawak, Borneo.

N. MACDOUGALLI, Issel, Moll. Born. p. 37, pl. 5, figs. 9-12 = *Helix macdougalli*, Pfr. Mon. Hel. VII. p. 526.

Sarawak, Borneo.

N. PALMICOLA, Stol. = *Microcystis palmicola*, Stol. Jour. As. Soc. Beng. XLII. 1873, p. 18, pl. 1, fig. 10 = *Helix palmicola*, Pfr. Mon. Hel. VII. p. 100.

Penang; in cocoa-nut trees.

N. CASTANEA, Müller, = *Helix castanea*, Müll. Hist. Verm. II. p. 67, No. 262; Chemnitz, IX. pt. II. p. 135, pl. 131, figs. 1177-78, = *Nanina castanea*, Beck, Index p. 4 = *Helix castanea*, Pfr. Mon. Hel. I. p. 44.

Sumatra.

N. VITELLUS, Shuttleworth, in Cuming's list = Chemnitz, 2nd edit. Helix, No. 957, pl. 145, fig. 14 = *H. vitellus*, Pfr. Mon. Hel. III. p. 44, where it is thought possibly to be a variety of *H. citrina*, L. so commonly distributed throughout the Archipelago.

This specimen was found in Amboyna by Cuming. Celebes.

N. NEMORENSIS, Müll. Hist. Verm. II. in Index and quoted under the same name by Chemnitz, 2nd edit. Helix, No. 183, pl. 35, figs. 9-11 = Férussac, Hist. Nat. Moll. pr. 232, as *Helicella* = *Helix nemoralis*, Müll. op. cit. II. p. 62, No. 257 = *H. cretacea*, Born, Mus. p. 376, pl. 16, figs. 1-2; Chemnitz, IX. pt. II. p. 119, pl. 129, figs. 1146-47; *neuardii*, De Haan in Menke's Synopsis = *Nanina nemorensis*, Gray, Proc. Zool. Soc. 1834, p. 59; also Beck, Index, p. 4. = *Helix nemorensis*, Pfr. Mon. Hel. I. p. 46.

Moluccas and New Ireland.

This shell was once to be found in all the old Museums in Europe.

N. BROTHI, Bonnet, = *Helix brothi*, Bonnet, Rev. et Mag. Zool. XVI. 1864, p. 67, pl. 5, fig. 1; Pfr. Mon. Hel. V. p. 466. Pfr. doubts whether this specimen is really distinct from *H. nemorensis*, and whether it is really indigenous to Borneo.

N. BIMAENSIS, Mousson, Moll. Java, p. 111, pl. 21, fig. 1 = *Hemiplecta bimaënsis*, Albers, Heliceen, p. 60 = *Helix bimaënsis*, Pfr. Mon. Hel. III. p. 45 = *Nanina limaënsis*, Adams, Genera, Moll. II. p. 223.

In jungles, Bimah; Sumbawa.

N. OVIVITELLUS, Reeve, = *Helix ovivitellus*, Reeve, Conch. Icon. No. 1425, pl. 202 ; Pfr. Mon. Hel. IV. p. 22.

Amboyna.

N. HALATA, Mouss. Moll. Java, p. 112, pl. 21, fig. 2 = *Hemiplecta halata*, Albers, Heliceen, p. 60 = *Helix halata*, Pfr. in Chemn. 2nd edit. Helix, No. 929, pl. 142, figs. 9-10 ; (*Nanina*), Pfr. Mon. Hel. III. p. 45.

Dompo, Java.

N. RAREGUTTATA, Mouss. Moll. Java p. 112, pl. 21, fig. 3 = *Helix rareguttata*, Pfr. Mon. Hel. III. p. 46.

Bimah ; Sumbawa.

N. SPARSA, Mouss. Jour. Conch. VI. 1857, p. 155, pl. 6, fig. 4 = *Helix sparsa* (*Nanina*), Pfr. Mon. Hel. IV. p. 343.

Island of Bali.

N. COFFEA, Pfr. = *Helix coffea*, Pfr. Proc. Zool. Soc. 1855, p. 111 = *Nanina* (*Xesta*) *coffea*, Pfr. Versuch. p. 119 = *Helix coffea*, Pfr. Mon. Hel. IV. p. 23.

Moluccas and Island of Lombok.

N. CRESPIGNYI, Higgins, = *N. decrespignii* (*Xesta*), Higgins, Proc. Zool. Soc. 1868, p. 179, pl. 14, fig. 4 = *N. decrepignyi* (*Xesta*), Paetel, Catal. p. 84 = *Helix crespignyi*, Pfr. Mon. Hel. VII. p. 80.

Island of Labuan.

N. TROCHUS, Müll. = *Helix trochus*, Müll. Verm. II. p. 79, No. 275 ; Chemn. 2nd edit. Helix, No. 127, pl. 21, figs. 13-14 = *Trochus hortensis*, Chemn. IX. pt. II. p. 52, pl. 122, figs. 1055-56 = *Nanina trochus*, Beck, Index p. 4 = *N. circumdata*, von Martens = var. *Helix sulphurea*, Reeve = *H. circumpecta*, Mousson = *H. colorata*, Mousson = *Nanina* (*Hemiplecta*) *circumpicta*, Paetel, Catal. p. 84 = *Helix trochus*, Pfr. Mon. Hel. I. p. 46 ; III. p. 46 ; VII. p. 80. Also, Zeitschrift für Malak. 1851, and Chemn. Ed. Nov. Helix I. p. 160, pl. 146, figs. 3-5.

An imperforate trochiform conical shell with an obtuse vertex ; white with a broad red band, which is wanting inside, about an inch high and 10 lines in diameter. This shell is said in one place to come from Macassar, and in another from the East Indies ; but it is evidently a common widespread species, well-known to many earlier conchologists.

N. CIDADIS, Lamarck, = *Helix cidaris*, Lamarck, Hist. d. animaux, 43, p. 77 ; Deshayes' edit. p. 45 = *H. cidaris*, Delessert, Rec. de Coq. pl. 26, fig. 11 ; = *Nanina rapa*, Beck, Index, p. 3 ; = *Helix cidaris*, Pfr. Mon. Hel. I. p. 45.

Timor.

N. GLUTINOSA, Metcalfe, = *Helix glutinosa*, Metcalfe, Proc. Zool. Soc. 1851 ; Pfr. Mon. Hel. III. p. 54.

Borneo.

N. CITRINA, L. = *Helix citrina*, L. Syst. Nat. 10th edit. p. 771 ; 12th edit. No. 679, p. 1245.

This widely distributed and well-known shell has been described by all the ancient conchologists as far back as Lister, and, strange to say, for a species which varies a good deal, has not many synonyms. It is an umbilicate shell, orbicularly convex, with an obtuse spire ; yellowish with a brown band, or with a white band or two, or a purple band joined to a white one ; with varieties in which the band is red, yellow, white, blackish, and even yellowish-green. This band of colour seems to divide the shell into an upper and lower portion. There are excellent figures of the animal in the " Voyage de l'Astrolabe," pl. 11, figs. 1-4.

It is very common through the islands of the whole Archipelago and the Malay Peninsula.

N. COAGULATA, Pfr. = *Helix coagulata*, Pfr. Proc. Zool. Soc. 1856, p. 32 ; Mon. Hel. IV. p. 41.

Amboyna.

N. LUCIFUGA, Beck, Index, p. 3 = *Helix citrina*, var. of Müller, Chemn. and Pfr. Mon. Hel. I. p. 53.

This is a common shell like the last, and is subject to similar variations in colouring, which divide into three principal forms. Var. A: chestnut above, white below, divided at the periphery by a broad white band; umbilicus, chestnut brown. This variety is figured by Chemn. (*Helix*, fig. 1174). Var. B: greyish above with a brownish median (Chemn. fig. 1175). Var. C: white with a blackish-brown band. Regarded by some as quite distinct from *N. citrina*.

Moluccas, Malay Peninsula, &c.

N. FULVIZONA, Mousson, in coll.; von Martens, Ostas. Zool. II. p. 201 = *Helix fulvizona*, Pfr. Mon. Hel. V. p. 96.

This is a most variable shell with regard to its colouring. Ten different varieties are enumerated by Pfr., the type approaching somewhat to *Helix citrina*, L.

Celebes.

N. PARCIPILA, von Martens, in Monat. Akademie Berlin, 18th April, 1864, p. 264; (*Xesta*) Ostas. Zool. II. p. 192, pl. 9, fig. 1 = *Helix parcipila*, Pfr. Mon. Hel. V. p. 119.

Adenare Islands, Moluccas.

N. IGNESCENS, Pfr. = *Helix ignescens*, Pfr. Proc. Zool. Soc. 1861, p. 20, pl. 2, fig. 1 = *Nanina ignescens*, Wallace, Proc. Zool. Soc. 1865, p. 406; (*Xesta*) von Martens, Ostas. Zool. II. p. 192, pl. 9, fig. 2 = *Helix ignescens*, Pfr. Mon. Hel. V. p. 98.

Batchian Island, Moluccas.

N. MONOZONALIS, Lamarck, = *N. monozalis*, Pfr. Nomen. Hel. p. 40, No. 582 = *Helix monozonalis*, Lamarck, Hist. Nat. 1st edit. IV. p. 66, Desh. edit. p. 29 = *Helix unizonalis*, Desh. Encycl. Meth. pl. 462, fig. 6 = *Helicella unizonalis*, Fér. pr. 241, Hist. pl. 91, fig. 4 = *Nanina monozonalis*, Gray, Proc. Zool. Soc. 1834, p. 59 = *Zonites unizonalis*, Swainson, Malac. p. 331 = *Helix monozonalis*, Pfr. Mon. Hel. I. p. 72.

Swainson regards this shell as a mere variety of *N. citrina*.

Amboyna.

N. OBLIQUATA, Reeve, = *Helix obliquata*, Reeve, Conch. Icon. pl. 74, sp. 384 = *H. citrina*, var. Chemn. 2nd edit. pl. 24, figs. 1-2; = *Nanina teysmanni*, Mousson, in coll. = *N. obliquata*, von Mart. Ostas. Zool. II. p. 235 = *Helix obliquata*, Pfr. Mon. Hel. V. p. 115.

Sumatra; Borneo.?

N. NANINOIDES, Benson, = *Helix naninoides*, Benson, Ann. and Mag. Nat. Hist. IX. 1842, p. 486; Phil. Icon. II. 9, p. 2, pl. 6, fig. 3; Chemn. 2nd edit. Helix, No. 158, pl. 25, figs. 7-8; Pfr. Mon. Hel. I. p. 70.

This species varies in having distinct concentric striæ or being without them. Colour brownish or nearly white; periphery more or less distinctly keeled.

Singapore; Chusan.

N. UMBILICARIA, Leguillou, = *Helix umbilicaria*, Leguillou, Rev. Zool. 1842, p. 137; Chemn. 2nd edit. Helix, No. 63, pl. 11, figs. 14-15; Pfr. Mon. Hel. I. p. 64, V. p. 123.

Differs from the following in being a more solid shell, opaque, and smoother.

Sumatra; Banka; Java.

N. DESGRAZII, Homb. et Jacq. = *Helix desgrazii*, Homb. et Jacq. Voy. Pole Sud, Zool. V. p. 12, pl. 5, figs. 4-6; Pfr. Mon. Hel. IV. p. 42.

Sumatra.

N. JAVANICA, Lamarck, = *Helix javanica*, Lamarck, 1st edit. p. 76; 2nd edit. p. 45; Chemn. 2nd edit. Helix, No. 62, pl. 11, figs. 12-13 = *Helicella javanensis*, Fér. pr. 234; Hist. pl. 92, fig. 2 = *Nanina javanensis*, Gray, Proc. Zool. Soc. 1834, p. 59 = *N. javana*, Beck, Index, p. 4 = *Helix javanica*, Pfr. Mon. Hel. I. p. 64.

Very close to *Nanina naninoides*.

Java.

N. INDUTA, Pfr. = *Helix induta*, Pfr. Proc. Zool. Soc. 1845, p. 128; Mon. Hel. I. p. 79 = *Nanina induta*, Gray = *N. bataviana* [junior (?)], von Martens.

Java.

N. CONVOLUTA, Deshayes, = *Helix convoluta*, Deshayes, Fér. Hist. I. p. 401. No. 255 bis, pl. 87, fig. 2; Pfr. Mon. Hel. III. p. 48 = *Nanina convoluta*, Gray.

Sumatra.

N. CUTTERI, H. Adams, = *Macrochlamys cutteri*, H. Adams, Proc. Zool. Soc. 1870, p. 794, pl. 48, fig. 21 = *Helix cutteri*, (*Macrochlamys*), Pfr. Mon. Hel. VII. p. 80.

Busan, near Sarawak, Borneo.

N. AUREA, von Martens, = *N. (Orobis) aurea*, v. Mart. Monatsber. Berl. Ak. Ap. 18th, 1864, p. 266; Ostas. Zool. II. p. 243, pl. 12, fig. 12; Pfr. Mon. Hel. V. p. 67.

Kepahiang, Sumatra.

N. CONSUL, Pfr. = *Helix consul*, Pfr. Proc. Zool. Soc. 1854, p. 289; Reeve, Conch. Icon. Helix, No. 1395, pl. 198 = *Nanina (Xesta) consul*, Pfr. Vers. p. 120 = *Helix consul*, Pfr. Mon. Hel. IV. p. 44.

Sarawak, Borneo.

N. CINNAMOMEA, Valenc. = *Helix cinnamomea*, Valenc. Museum, Paris; Reeve, Conch. Icon. No. 442, pl. 83 (?) = *Nanina cinnamomea*, Albers, Heliceen; Gray, Catal. Pulmon. p. 93; H. and A. Adams, Gen. II. p. 22 = *Xesta cinnamomea*, Pfr. Vers. p. 120 = *Helix cinnamomea*, Pfr. Mon. Hel. I. p. 54, III. p. 62, IV. p. 42.

Penang.

N. JUCUNDA, Pfr. = *Helix jucunda*, Pfr. Proc. Zool. Soc. 1863, p. 524; Novit. Conch. p. 307, No. 419, pl. 74, figs. 13-14 = *Nanina jucunda (Macrochlamys)*, von Martens, Ostas. Zool. II. p. 240, pl. 12, fig. 7 = *Helix jucunda*, Pfr. Mon. Hel. V. p. 101.

Collected in the island of Labuan by Sir Hugh Low.

N. FULVO-CARNEA, von Martens, in Monatsber. Ak. Berlin, 18th April, 1864, p. 266 (*Orobis*) = *Macrochlamys fulvo-carnea*, v. Mart. Ostas. Zool. II. p. 242, pl. 12, fig. 8 = *Helix fulvo-carnea*, Pfr. Mon. Hel. V. p. 101.

Menado, Celebes.

N. MALACCANA, Pfr. = *Helix malaccana*, Pfr. Proc. Zool. Soc. 1854, p. 147; Reeve, Conch. Icon. Helix No. 1373, pl. 195 = *Nanina malaccana* (*Xesta*), Pfr. Vers. p. 120 = *Helix malaccana*, Pfr. Mon. Hel. IV. p. 4b.

Keddah, Malay Peninsula.

N. AGLAJA, Pfr. = *Helix aglaja*, Pfr. Proc. Zool. Soc. 1854, p. 289; Reeve, Conch. Icon. Helix No. 1396, pl. 199 = *Nanina aglaja* (*Xesta*), Pfr. Vers. p. 120 = *Helix aglaja*, Pfr. Mon. Hel. IV. p. 46.

Sarawak, Borneo.

N. STEPHOIDES, Stol. = *Macrochlamys stephoides*, Stol. Jour. As. Soc. Beng. XLII. 1873, p. 17, pl. 1, fig. 9 = *Helix stephoides* (*Macrochlamys*), Pfr. Mon. Hel. VII. p. 109.

Penang Hill.

N. INFANS, Pfr. = *Helix infans*, Pfr. Proc. Zool. Soc. 1854, p. 290; Reeve, Conch. Icon. Helix No. 1417, pl. 201; (*Microcystis*) Pfr. Vers. p. 123; Mon. Hel. IV. p. 51.

Labuan and Sarawak, Borneo. It also occurs in Java, where it was named *Helix adnata* by Mousson.

N. CLAIRVILLEA, Fér. = *Helix clairvillea* (*Helicella*), Fér. pr. 243, Hist. pl. 91, fig. 1 = *Nanina clairvillea*, Gray, Proc. Zool. Soc. 1834, p. 59; Beck, Index, p. 3 = *Helix clairvillea*, Pfr. Mon. Hel. I. p. 43.

Amboyna.

N. WAANDERSIANA, Zollinger; Mousson, Jour. Conch. VI. 1857, p. 154, pl. 6, fig. 1 = *Helix waandersiana* (*Nanina*), Pfr. Mon. Hel. IV. p. 345.

Island of Bali.

N. BALIENSIS, Mousson, Jour. Conch. VI. 1857, p. 155. pl. 6, fig. 6 = *Helix baliensis* (*Nanina*), Pfr. Mon. Hel. IV. p. 345.

Diambrana, Bali.

N. INQUINATA, v.d. Busch, = *Helix inquinata*, v.d. Busch, in Phil. Icon. I. 1, p. 10, pl. 1, fig. 4; Chemn. 2nd edit. Helix No. 169, pl. 31, figs. 5-6; Pfr. Mon. Hel. I. p. 46.

Java.

N. SEMISCULPTA, von Martens, Malak. Bl. XX. 1872, p. 167; Pfr. Novit. Conch. IV. p. 123, No. 826, pl. 128, fig. 6 = *Helix semisculpta* (*Nanina*), Pfr. Mon. Hel. VII. p. 87.

Celebes.

N. CINCTA, Lea, = *Helix cincta*, Lea, Obs. I. p. 168, pl. 19, fig. 68; Pfr. Mon. Hel. I. p. 54.

In the figure the columellar margin of the peristome appears thickened and dilated; = *Nanina steursii*, Shuttlew. = *N. contristata*, Mousson.

Java.

N. HUMPHREYSIANA, Lea, = *Helix humphreysiana*, Lea, Trans. Amer. Phil. Soc. VII, p. 463, pl. 12, fig. 16; Chemn. 2nd edit. Helix No. 168, pl. 31, figs. 3-4; Fér. Hist. XXXIV. pl. 2, fig. 7; von Martens, Ostas. pl. 10, fig. 4.

This shell seems somewhat widely distributed, since it is recorded from Pondicherry, Singapore, and Sumatra. It is an orbiculately conical shell, convex below, rugulosely granular, yellowish brown with a chestnut band at the periphery; spire somewhat elevated and acute, whorls six to seven, aperture oblique, simple acute, diam. maj. 53, min. 47, alt. 33 mill. Pfr. Mon. Hel. I. p. 43.

N. CORROSA, Mousson, Jour. Conch. VI. 1857, p. 156 = *Helix corrosa* (*Nanina*), Pfr. Mon. Hel. IV. p. 348.

Java.

N. NOBILIS, Pfr. = *Helix nobilis*, Pfr. Proc. Zool. Soc. 1849, p. 127 ; Chemn. 2nd edit. *Helix* No. 771, pl. 125, figs. 1-2 ; Pfr. Mon. Hel. III. p. 69.

Borneo ; var. in Philippines.

N. ARGUTA, Pfr. = *Helix arguta*, Pfr. Proc. Zool. Soc. 1856, p. 327 ; Pfr. Mon. Hel. IV. p. 61.

Tengger Hills, Java (written Teuga Hills in Pfr.).

N. HERKLOTSIANA, Dohrn, Malak. Bl. VI. 1859, p. 206 = *Helix herklotsiana*, Pfr. Mon. Hel. V. p. 121.

Java.

N. BATAVIANA, v. d. Busch, = *Helix bataviana*, v. d. B. in Phil. Icon. I. 1, p. 9, pl. 1, fig. 3 ; Chemn. 2nd edit. *Helix* No. 58, pl. 11, figs. 1-3 ; Pfr. Mon. Hel. I. p. 77.

Java.

N. SOULEYETIANA, Pfr. = *Helix souleyetiana*, Pfr. in Proc. Zool. Soc. 1851 ; Chemn. 2nd edit. *Helix* No. 950, pl. 144, figs. 16-17 ; Pfr. Mon. Hel. III. p. 74. (N.B.—The reference is erroneously given as 73 in Pfr. Nomen. Hel. Viv.).

Borneo.

N. DONOVANI, Pfr. = *Helix donovani*, Pfr. in Zeitschr. f. Malak. 1851, p. 26 ; Chemn. 2nd edit. *Helix* No. 967, pl. 147, figs. 8-9 ; Pfr. Mon. Hel. III. p. 75.

Borneo.

N. CENTRALIS, Mouss. Moll. Java, p. 17, pl. 2, fig. 1 = *N. (Hemiplecta) centralis*, Albers, Heliceen, p. 60 = *Helix centralis* (*Nanina*), Pfr. Mon. Hel. III. p. 78.

Java.

N. MENADENSIS, Mousson, Jour. Conch. VI. 1857, p. 157 = *Helix menadensis*, Pfr. Mon. Hel. IV. p. 345.

Menado, Celebes.

N. RIEDELII, von Martens, Monatsber. Ak. Berlin, 18th April, 1864, p. 264; Ostas. Zool. II. p. 213, pl. 8, fig. 5 = *Helix riedelii*, Pfr. Mon. Hel. V. p. 131 = *H. securiformis*, Mousson, not Deshayes = *Cochlostyla riedelii*, Paetel.

Menado, Celebes.

N. CYMATIUM, Benson, = *Helix cymatium*, Benson, MS; Pfr. Novit. Conch. I. p. 58, No. 95, pl. 17, figs. 1-2 = *Nanina cymatium* (*Hemiplecta*), Pfr. Vers. p. 121 = *Helix cymatium*, Pfr. Mon. Hel. IV. p. 109.

Lancavi Island, Straits of Malacca; Penang and Perak, Malay Peninsula.

N. CHEVALIERII, Souleyet, = *Helix chevalierii*, Soul. in Revue Zool. 1842, p. 101; Voy. Bonite II. p. 504, Atlas, pl. 28, figs. 24-26; Pfr. Mon. Hel. I. p. 120 = *Nanina chevalierii*, Albers, Heliceen.

The only locality given in the "Voyage de la Bonite" is Peninsula of Malacca.

N. SCHUMACHERIANA (HELIX), Pfr. = *Helix densa*, Adams and Reeve, Voy. of Samarang, Moll. p. 62, pl. 16, fig. 8; Chemn. 2nd edit. Helix No. 954, pl. 145, figs. 5-7 = *H. schumacheriana*, Pfr. Zeitschr. fr. Malak. 1850, p. 70 = *H. densa*, Pfr. Mon. Hel. III. p. 111.

Philippines; Borneo.

N. CELEBENSIS, Pfr. = *Helix celebensis*, Pfr. Jour. Conch. X. 1862, p. 229, pl. 10, fig. 8; Sowerby, Jour. Conch. XV. 1867, p. 111 (Char. emend.); Pfr. Mon. Hel. V. p. 71.

Rhwo (Rhio?) Island, Celebes.

N. VIRENS, von Martens, Ostas. Zool. II. p. 237 = ? *Helix tumens*, Pfr. Mon. Hel. III. p. 43; Reeve, Conch. Icon. fig. 477 (also cited for *H. cidaride*) = *Nanina virens*, von Martens, Ostas. Zool. II. p. 237 = *Helix virens*, Pfr. Mon. Hel. V. p. 73.

Sumatra.

N. WALLACEI, Pfr. = *Helix wallacei*, Pfr. Proc. Zool. Soc. 1858, p. 20, pl. 40, fig. 5; Chemn. pl. 164, figs. 13-15; Pfr. Mon. Hel. V. p. 96 = *Nanina wallacei*, Wallace, Proc. Zool. Soc. 1865, p. 406 = *N. (Xesta) wallacei*, von Martens, Ostas. Zool. II. p. 202, var. Pfr. Novit. Conch. IV. pl. 128, fig. 5.

Macassar; Celebes.

N. RAPA, (HELIX), Müller, Verm. II. p. 67, No. 261; Chemn. IX. pt. II. p. 134, pl. 131, fig. 1176; Pfr. Zeitschr. Malak. 1844, p. 178; Mon. Hel. I. p. 62 = *Helix cidaris*, Lamarck.

Amboyna.

N. BORNEENSIS, Pfr. = *Helix borneensis*, Pfr. Proc. Zool. Soc. 1849, p. 127; Reeve, Conch. Icon. pl. 196, fig. 1379; Pfr. Mon. Hel. III. p. 70.

Borneo.

N. RUGATA, von Martens, Monatsber. Ak. Berlin, 18th July, 1864, p. 528; Ostas. Zool. II. p. 229, pl. 10, fig. 3 = *Helix cidaris*, Pfr. Mon. Hel. III. p. 43 (not Lamarck); Reeve, Conch. Icon. pl. 86, sp. 464 = *Hemiplecta cidaris*, Wallace, Proc. Zool. Soc. 1865, p. 406 = *Helix clairvillea*, Reeve, Conch. Icon. Helix pl. 206, sp. 1454 (not Fér.) = *Nanina cidaris*, Gray, Catal. Pulmonif. p. 114.

Celebes and Timor.

N. SUMATRENSIS, Mouss. MSS.; von Martens, Ostas. Zool. II. p. 237 = *Helix sumatrensis*, Pfr. Mon. Hel. V. p. 77.

Sumatra.

N. PEASEANA, Pfr. = *Helix peaseana*, Pfr. Proc. Zool. Soc. 1864, p. 603; Mon. Hel. V. p. 77 = *Hemiplecta peaseana*, Wallace, Proc. Zool. Soc. 1865, p. 406 = *Nanina rareguttata*, var. ? von Martens, Ostas. Zool. II. p. 206.

Timor and Buru.

N. MARTINI, Pfr. = *Helix martini*, Pfr. Proc. Zool. Soc. 1854, p. 149; Reeve, Conch. Icon. Helix No. 1356, pl. 193; Pfr. (*Caracolus*), Vers. p. 141 = *Nanina amphidroma*, von Martens,

Ostas. Zool. pl. 11, figs. 2-5 (Normal and sinistral shells) = *Nanina producta*, Mousson = *Ariophanta martini*, Semper = *Helix martini*, Pfr. Mon. Hel. IV. p. 300.

Padang, Sumatra.

N. BROOKEI, Adams and Reeve, = *Helix brookei*, Adams and Reeve, Voy. Samarang, Moll. p. 60, pl. 15, fig. 4; Chemn. 2nd edit. Helix No. 870, pl. 135, figs. 1-2; Pfr. Mon. Hel. III. p. 52 = *H. gigas*, Pfr. Zeitschr. f. Malak. 1850, p. 81.

In the mountains of Borneo.

N. HUGONIS, Pfr. = *Helix hugonis*, Pfr. Proc. Zool. Soc. 1863, p. 523; Novit. Conch. p. 304, No. 415, pl. 74, figs. 1-3; Mon. Hel. V. p. 81 = *H. sinistra*, Bonnet, Rev. Zool. 1864, p. 67, pl. 5, fig. 2 = *Nanina hugonis*, von Martens, Ostas. Zool. II. p. 225.

Collected in the island of Labuan by Sir Hugh Low.

N. REGALIS, Benson, = *Helix regalis*, Annals Mag. Nat. Hist. 1850, p. 215; Chemn. 2nd edit. Helix No. 915, pl. 141, figs. 5-6, var. 7-8 = *H. vittata*, Adams and Reeve, Voy. Samarang, Moll. p. 60, pl. 15, fig. 7.

Sarawak and Balambangan.

N. LINDSTEDTI, Pfr. = *Helix lindstedti*, Pfr. Proc. Zool. Soc. 1856, p. 387; Mon. Hel. IV. p. 31.

Malacca.

N. JANUS, Chemn. = *Helix janus*, Chemn. XI. p. 307, pl. 213, figs. 3016-17; 2nd edit. Helix No. 59, pl. 11, figs. 4-6; Pfr. Proc. Zool. Soc. 1842, p. 87; Mon. Hel. I. p. 77 = *Helicella bifrons*, Fér. p. 233 = *Helix mackenziana*, Soul. Rev. Zool. 1841, p. 347 = *H. balesteriana*, Lea, Trans. Amer. Phil. Soc. VII. p. 460, pl. 12, fig. 10 = *Ariophanta janus*, Beck, Index, p. 5.

Mount Ophir, near Malacca.

N. RUMPHII, v.d. Busch, = *Helix rumphii*, v. d. Busch, Phil. Icon. I. 1, p. 9, pl. 1, fig. 2; Chemn. 2nd edit. Helix No. 60,

pl. 11, figs. 7-9; Pfr. Mon. Hel. I. p. 76; (*Nanina* ?) Symb. II. p. 20.

Island of Java.

N. CLYPEUS, Mouss. Jour. Conch. VI. 1857, p. 156 = *Helix clypeus*, Pfr. Mon. Hel. IV. p. 344.

Mount Semeru, Java.

N. NASUTA, Metcalfe, = *Helix nasuta*, Metcalfe, Proc. Zool. Soc. 1851; Pfr. Mon. Hel. III. p. 203.

Borneo.

N. (ARIOPHANTA) INTERRUPTA, G. Nevill, Hand-list Moll. Ind. Mus. 1878, p. 20 (n.sp.?).

Kuala Kangsa, Perak, Malay Peninsula.

N. (RHYSOTA) sp. ? von Möllendorff, Jour. As. Soc. Bengal, LV. 1886, p. 301.

A large greenish-brown shell, with dark brown band at periphery, and broader band at umbilicus; periphery obtusely angular; spire of six whorls, coarsely sculptured. Near *N. pluto*, Pfr. from Cambodia.

Perak, Malay Peninsula.

N. (EUPLECTA) BIJUGA, Stol. Jour. As. Soc. Bengal, XLII. 1873, p. 14, pl. 1, figs. 4-7, pl. 2, figs. 16-18 (*Rotula*) = *Helix bijuga*, Pfr. Mon. Hel. VII. 1876, p. 105 = *Nanina bijuga*, G. Nevill, Handl. Moll. Ind. Mus. 1878, p. 31; (*Rotula*), Crosse, Jour. Conch. XXVII. 1879, p. 336.

Bukit Pondok; Penang; Malay Peninsula.

N. (MACROCHLAMYS) sp. 2 and a species of *Microcystis* were found at Bukit Pondok by Dr. Hungerford.

N. (MICROCYSTINA) TOWNSENDIANA, Godwin-Austen and G. Nevill, Proc. Zool. Soc. 1879, p. 736, pl. 49, fig. 1.

Bukit Pondok.

N. (KALIELLA) PERAKENSIS, G. Nevill and Godwin-Austen, Land and Freshw. Moll. Ind. I. 1882, p. 8, pl. 2, fig. 7.

Bukit Pondok, Perak.

N. (SITALA) CARINIFERA, Stol. Jour. As. Soc. Bengal, XLIII. 1873, p. 16, pl. 1, fig. 8; Godwin-Austen, Land and Freshw. Moll. Ind. II. 1882, p. 35.

Penang.

6. TROCHONANINA, Mousson, 1869. Jour. Conch, 1869, p. 330.

The author states that certain *Helices* should be separated from the genus *Trochomorpha*, Albers (*Heliceen*, p. 60), under the name of *Trochonanina*, distinguished by an upper surface more or less sculptured, base polished with a callosity at the insertion of the columella.

TROCHONANINA LYCHNIA, Benson, = *Helix lychnia*, Benson, Ann. and Magaz. Nat. Hist. 2nd series, X. 1852; Pfr. Mon. Hel. III. p. 626 = *T. lycheria*, Pfr. Nomen. Hel. Viv. p. 57, No. 113.

Island of Singapore.

T. TROPIDOPHORA, Adams and Reeve, = *Helix tais*, Hombron et Jacquinot, Voy. Pole Sud, Atl. Livr. 22, pl. 7, figs. 42-45; Chemn. 2nd edit. *Helix* No. 782, pl. 125, figs. 32-33 = *H. thais*, Pfr. Zeitschr. f. Malak. 1849, p. 68 = *H. tropidophora*, Adams and Reeve, Voy. Samarang, Moll. p. 59, pl. 14, fig. 14 = *H. tais*, Pfr. Mon. Hel. III. p. 37.

Islands of Marquesas; Borneo.

T. CONICOIDES, Metc. = *Helix conicoides*, Metc. Proc. Zool. Soc. 1851; Chemn. 2nd edit. *Helix* No. 1020, pl. 153, figs. 20-21; Pfr. Mon. Hel. III. p. 37.

Borneo.

T. JENYNSI, Pfr. = *Helix jenynsi*, Pfr. Proc. Zool. Soc. 1845, p. 131; Phil. Icon. II. 11, p. 86, pl. 7, fig. 8; Pfr. Mon. Hel. I. p. 81.

Java; New Hebrides.

7. *HYALINIA*, Fér. 1819, Prodrömus, p. 40 = *Aplöstoma*, Moquin-Tandon, 1855.

Shell depressed or conical, more or less longitudinally, but not spirally striate; semi-transparent smooth and shining; umbilicus large, rarely small or none; epiphragm none, rudimentary or vitreous. Flagellum none or short, thick and steadied by a terminal muscle; mucous vesicles represente by a glandular layer. 50 sp.

Mostly Europe and North America.

HYALINIA AMBOINENSIS, von Martens, Monatsber. Berl. Ak. 18th Ap. 1864, p. 266; Ostas. Zool. II. p. 244, pl. 12, fig. 11; Pfr. Mon. Hel. V. p. 141.

Buru; Amboyua; Banda-Nera.

8. *TROCHOMORPHA*, Albers, 1850, Heliceen, p. 116. Section of
Helix = *Geotrochus*, van Hasselt.

Shell sub-perforate, spire depressed conical; last whorl carinated at the periphery; columella very short, vertical; lip simple. 19 sp.
Mauritius; India; East Indies.

TROCHOMORPHA CONUS, Philippi, = *Helix conus*, Philippi, coll. Pfr. Symb. I. p. 39; Phil. Icon. I. 1, p. 11, pl. 1, fig. 6; Chemn. 2nd edit. *Helix* No. 216, pl. 28, figs. 6-7; Pfr. Mon. Hel. I. p. 35.
Java.

T. (?) *ANGULATA*, Issel, Moll. Born. 1874, p. 42, pl. 5, fig. 5-8 = *Helix angulata*, Pfr. Mon. Hel. VII. p. 528.

Sarawak, Borneo.

T. *CEROCONUS*, Pfr. = *Helix ceroconus*, Pfr. Proc. Zool. Soc. 1863, p. 523; von Martens, Ostas. Zool. II. p. 257; Pfr. Mon. Hel. V. p. 84.

Labuan.

T. LEUCOPHLOEA, von Martens, = *Helix leucophloea* (*Fruticola*) von Martens, Ostas. Zool. II. p. 269, pl. 12, fig. 14; Pfr. Mon. Hel. V. p. 85.

North Celebes.

T. CONULUS, von Martens, = *Helix conulus*, von Martens, Monatsber. Berl. Ak. 18th July, 1864, p. 523 (not *H. conula*, Pease, 1861); (*Fruticola*), Ostas. Zool. II. p. 269, pl. 13, fig. 15; Pfr. Mon. Hel. V. p. 333.

Kepahiang, Sumatra.

T. GYSSERIANA, Pfr. = *Helix gysseriana*, Pfr. Malak. Bl. XII. 1865, p. 122; Novit. Conch. Fasc. XXIII. p. 270, No. 381, pl. 67, figs. 3-5; Mon. Hel. V. p. 333.

Moluccas.

T. TERNATANA, Le Guillou, = *Helix ternatana*, Le Guill. Revue Zool. 1842, p. 138 = *H. batchianensis*, Pfr. Malak. Bl. 1860, p. 235 = *Trochomorpha batchianensis*, Wallace, Proc. Zool. Soc. 1865, p. 407 = *T. ternatana* (*Nigritella*) v. Martens, Ostas. Zool. II. p. 246, pl. 13, fig. 1 = *Helix ternatana*, Pfr. Mon. Hel. V. p. 254.

Moluccas.

T. CARINIFERA, Stol. = *Sitala carinifera*, Stol. Jour. As. Soc. Bengal, XLII. 1873, p. 16, pl. 1, fig. 8 = *Helix carinifera*, Pfr. Mon. Hel. VII. p. 103.

Penang Hill.

T. MICULA (*ZONITES*), Mouss. = *Zonites micula*, Mouss. Jour. Conch. VI. 1857, p. 158 = *Helix micula* (*Zonites*), Pfr. Mon. Hel. IV. p. 343.

Bali Island, Java.

T. TRICOLOR, von Martens, Malak. Bl. X. 1863, p. 134: (*Videna*), Ostas. Zool. II. p. 252, pl. 13, fig. 3 = *Helix tricolor*, Pfr. Mon. Hel. V. p. 181.

Island of Buru, Moluccas.

T. BICOLOR, von Martens, Monatsber. Berl. Ak. 18th Ap. 1864, p. 267; (*Videna*), Ostas. Zool. II. p. 252, pl. 13, fig. 2 = *Helix bicolor*, Pfr. Mon. Hel. V. p. 182.

Sumatra; Borneo.

T. ZOLLINGERI, Pfr. = *Helix zollingeri*, Pfr. Proc. Zool. Soc. 1851; Chemn. 2nd. edit. Helix No. 939, pl. 143, figs. 21-22; Pfr. Mon. Hel. III. p. 113.

Java.

T. CANTORIANA, Benson, = *Helix cantoriana*, Benson, in Ann. and Magaz. Nat. Hist. 3rd series, VII. 1861, p. 85; Pfr. Mon. Hel. V. p. 186.

Sang-sang, near Penang.

T. PLANORBIS, Less. = *Helix planorbis*, Less. Voy. de la Coq. p. 312, pl. 13, fig. 4 = *H. marginata*, Müll. (teste Beck) = *H. planorbis*, Pfr. Mon. Hel. I. p. 122.

New Guinea; Java; Borneo.

T. GORONTALENSIS, von Martens, = *T.* sp. von Martens, Malak. Bl. XX. 1873, p. 168 = *T. gorontalensis*, v. Martens in Pfr. Novit. Conch. IV. p. 124, No. 827, pl. 128, fig. 7 = *Helix gorontalensis*, Pfr. Mon. Hel. VII. p. 208.

Gorontalo, Celebes.

T. TIMORENSIS (*VIDENA*), von Mart. Ostas. Zool. II. p. 248. pl. 13, fig. 6 = *Helix timorensis*, Pfr. Mon. Hel. V. p. 187.

Island of Timor.

T. LARDEA, von Mart. = *Helix zollingeri*, Mouss. Coll. (not Pfr.) = *Trochomorpha lardea*, von Mart. Monatsber. Berl. Ak. 18th April, 1864, p. 267; (*Videna*), Ostas. Zool. II. p. 251, pl. 13, figs. 5-6 = *Helix lardea*, Pfr. Mon. Hel. V. p. 255.

Ceram, Moluccas.

Family HELICIDA.

9. PATULA, Held, 1837.

Isis, p. 916 ; Albers, Heliceen, p. 64 = *Euryomphala*, Beck, 1837 = *Delomphalus*, Agassiz, 1837 = *Euryomphala*, Herrmansen, 1846 = *Discus*, H. and A. Adams (Genera II. p. 116) = *Pitys*, Harper Pease, 1871.

Shell perspectively umbilicate, discoid or turbinate, depressed, rugose or striate ; whorls gradually enlarging ; aperture round, toothless ; lip acute ; jaws smooth or slightly striate, with a more or less marked median protuberance. About 327 species, with a world-wide distribution.

PATULA QUADRISPIRA, von Mart. = *Helix quadrispira*, von Mart. Monatsber. Berl. Ak. 18th April, 1864, p. 267 = *Patula quadrispira* (*Rhytida*), von Mart. Ostas. Zool. II. p. 259, pl. 13, fig. 9 = *Helix quadrispira*, Pfr. Mon. Hel. V. p. 157.

Ceram, Moluccas.

P. OBSCURATA, Adams and Reeve, = *Helix obscurata*, Ad. and Reeve, Voy. Samarang, Moll. p. 59, pl. 14, fig. 18, (not Porro) = *H. arthurii*, Pfr. Zeitschr. f. Malak. 1851, p. 16 ; Chemn. 2nd edit. Helix No. 940, pl. 143, figs. 23-25 ; Pfr. Mon. Hel. III. p. 102.

Borneo.

P. LUTEA, von Mart. = *Helix lutea*, von Mart. Monatsber. Berl. Ak. 18th April, 1864, p. 268 = *Patula lutea* (*Macrocy cloides*), von Mart. Ostas. Zool. II. p. 260, pl. 12, fig. 16 = *Helix lutea*, Pfr. Mon. Hel. V. p. 167.

Buru, Moluccas.

10. HELIX, Linnæus.

Shell of variable form, smooth, rugose, striate, ribbed or tuberculate, sometimes pilose ; orbicular-convex, planorboid, trochiform, sub-turriculated, or short bulimiform (monstrosities sinistral, or with the whorls more or less uncoiled) ; aperture oblique, oval,

or semilunar, with or without interior teeth on the margin or parietal wall; lip simple or thickened internally or reflected; umbilicus covered to widely open.

Animal capable of complete retraction within the shell; the jaw finely striate, or ribbed, sulcate, or plicate.

Radula:—central teeth tricuspid, laterals bicuspid or tricuspid, with an obsolete internal cusp; marginals usually wider than high, short, with two or three small cusps.

Distribution:—world-wide; about 3,400 species known. Pfeiffer, Albers, Beck, Swainson, Férussac, Tryon, H. and A. Adams, and others have proposed a great number of groups in which it is generally found that similar ones have a similar geographical distribution. Unfortunately there has been a lamentable want of consent amongst these and other authors as to the grouping, and there is no accepted system which is followed by the generality of conchologists; it would seem in fact as if each one had his own. In this list the system of Pfeiffer is followed, who makes 86 sections and 67 sub-sections.

Section 22, Hygromia. Sub-section 1, Fruticola.

HELIX MILIAGEA, von Mart. = *H. milium*, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 524 (not Morse, 1859) = *H. milicea*, (*Fruticola*), von Mart. Ostas. Zool. II. p. 268, pl. 12, fig. 15; Pfr. Mon. Hel. V. p. 68.

Amboyna.

H. CRYPTOPILA, Mouss. = *H. cryptopila*, Pfr. Novit. Conch. IV. p. 40, No. 711, pl. 117, figs. 10-12 = *H. helicinoides*, var. von Mart. Ostas. Zool. II. p. 270; Mouss. Jav. Moll. p. 23, pl. 2, fig. 6; Pfr. Mon. Hel. III. p. 162, V. p. 259 (not Hom. et Jacq.) = *H. cryptopila*, Pfr. Mon. Hel. VII. p. 391.

Island of Rakata; Java.

H. EVERETTI (FRUTICOLA), H. Adams, Proc. Zool. Soc. 1873, p. 207, pl. 23, fig. 11; Pfr. Mon. Hel. VII. p. 401.

Sarawak, Borneo.

H. MENDAX, von Martens, Monatsber. Berl. Ak. 18th July, 1864, p. 524; (*Fruticola*), Ostas. Zool. II. p. 272, pl. 13, fig. 14; Pfr. Mon. Hel. V. p. 350.

Atapupu, Timor.

H. CRASSULA, Philippi, Icon. 1, 7. p. 152, pl. 5, fig. 3; Pfr. Mon. Hel. I. p. 198.

Java.

Sub-section 2, Monacha.

H. PULVISULUM (*FRUCTICOLA* ?), Issel, Moll. Born. 1874, p. 43, pl. 5, figs. 24-27; Pfr. Mon. Hel. VII. p. 524.

Borneo.

Section 29, Plectotropis.

H. WINTERIANA, Pfr. Symb. II. p. 41; Philippi, Icon. 2, p. 23, pl. 2, fig. 7; Chemn. 2nd edit. Helix No. 605, pl. 95, figs. 1-2; Pfr. Mon. Hel. I. p. 202.

Java.

H. HUTTONI, Pfr. Symb. II. p. 82. = *H. orbicula*, Hutton, Jour. As. Soc. VII. p. 217 = *H. huttoni*, Pfr. Mon. Hel. I. p. 202.

Himalayas; Java (?).

H. SUMATRANA, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 523; (*Plectotropis*), Ostas. Zool. II. p. 266, pl. 13, fig. 13; Pfr. Mon. Hel. V. p. 409.

Wonosari, Java.

H. SQUAMULOSA, Mouss. MSS; (*Plectotropis*), von Mart. Ostas. Zool. II. p. 266; Pfr. Mon. Hel. V. p. 409.

Island of Madura, near Java.

Section 45, Hemicycla. Sub-section 3, Coelatura.

H. SIMPLEX, Lamarck, 42, p. 77, Desh. edit. p. 45; (*Helicogena*), Fér. pr. add. 48 bis Hist. pl. 25 B. fig. 6; Pfr. Mon. Hel. I. p. 20.

Amboyna.

Section 62, Cepolis.

H. PORCELLANA, Grateloup, Actes Soc. Linn. Bordeaux, XI. p. 410, pl. 1, figs. 5-6; Pfr. Mon. Hel. I. p. 346.
Lombok, near Java.

Section 65, Phania.

H. PYROSTOMA (*HELICIGONA*), Fér. pr. 139, Hist. pl. 15, fig. 3-4; Pfr. Symb. III. p. 73; Chemn. 2nd edit. Helix No. 401, pl. 67, figs. 4-5 = *Carocolla pyrostoma*, Gray, Ann of Phil. n.s. IX. p. 412 = *Helix pyrostoma*, Pfr. Mon. Hel. I. p. 295.
Island of Gilolo.

Section 68, Obba. Sub-section Genuinae.

H. MAMMILLA (*HELICELLA*), Fér. pr. add. p. 67, Hist. pl. 25, figs. 1-2; Quoy and Gaim. Astrol. II. p. 93, pl. 7, figs. 3-5 (c. anim.); Lamarek, Desh. edit. 163, p. 105 = *Obba mammilla*, Beck, Index, p. 30 = *Helix mammilla*, Pfr. Mon. Hel. I. p. 318.
Celebes.

H. PAPILLA, Müll. Verm. II. p. 100, No. 298; (*Helicogena*), Fér. pr. 43, Hist. pl. 25 B. fig. 5; Lamarek, 79, p. 87, Desh. edit. p. 65; Chemn. 2nd edit. Helix No. 124, pl. 21, figs. 8-9 = *Trochus papilla*, Chemn. IX. p. 51, pl. 122, figs. 1053-54 = *Obba papilla*, Beck, Index, p. 30 = *Helix papilla*, Pfr. Mon. Hel. I. p. 318.
Celebes.

Sub-section 2, Janira.

H. CAMPANULA, Pfr. Proc. Zool. Soc. 1845, p. 65; var. Chemn. 2nd edit. Helix No. 694, pl. 111, figs. 13-14; Pfr. Mon. Hel. I. p. 321.

Indian Archipelago.

Sub-section 3, Philina.

H. LOXOTROPIS, Pfr. Zeitschr. f. Malak. 1850, p. 82; Chemn. 2nd edit. Helix No. 871, pl. 135, figs. 3-4; Pfr. Mon. Hel. III. p. 226.

Island of Gilolo.

H. LORQUINI, Pfr. Malak. Bl. XII. 1865, p. 122 ; Novit. Conch. Fasc. 23, p. 273, No. 385, pl. 67, figs. 14-15 ; Mon. Hel. V. p. 345.

Moluccas.

H. QUOYI, Deshayes, = *H. undulata*, Quoy and Gaim. Astrol. II. p. 91, pl. 7, figs. 1-2 = *H. quoyi*, Desh. Lamarck, Desh. ed. 162, p. 105 ; Fér. Hist. pl. 73 B. fig. 4 ; Pfr. Mon. Hel. I. p. 373, III. p. 238 ; IV. p. 286 ; Chemn. new edit. III. p. 358 ; (*Ampelita*) Pfr. Vers. p. 137 = *Vallonia undulata*, Gray, Fig. Moll. An. pl. 72, fig. 3.

Celebes.

H. ATACTA, Pfr. Proc. Zool. Soc. 1861, p. 386, pl. 37, fig. 5 ; von Mart. Ostas. Zool. II. p. 306, pl. 16, fig. 1 = *Planispira atacta*, Wallace, Proc. Zool. Soc. 1865, p. 409 = *Helix atacta*, Pfr. Mon. Hel. V. p. 376.

Ternate ; Gilolo.

H. HEROICA, Pfr. Proc. Zool. Soc. 1855, p. 114 ; (*Obba*), Vers. p. 137 ; Mon. Hel. IV. p. 291.

Celebes.

H. ATROFUSCA, Pfr. Proc. Zool. Soc. 1861, p. 22, pl. 3, fig. 3 ; Novit. Conch. p. 164, No. 261, pl. 45, figs. 1-3 ; (*Planispira*), von Mart. Ostas. Zool. II. p. 299 = *Planispira atro-fusca*, Wallace, Proc. Zool. Soc. 1865, p. 409 = *Helix atro-fusca*, Pfr. Mon. Hel. V. p. 382.

Island of Batchian.

H. LATIZONA, Pfr. Proc. Zool. Soc. 1863, p. 524 = *Planispira latizona*, Wallace, Proc. Zool. Soc. 1865, p. 409 = *Helix latizona*, Pfr. Mon. Hel. V. p. 394.

Ceram Island, Moluccas.

H. BICONVEXA, von Martens, Monatsber. Berl. Ak. 18th July, 1864, p. 526 ; Ostas. Zool. II. p. 317, pl. 16, fig. 13 ; Pfr. Mon. Hel. V. p. 404.

Island of Tavalli, Moluccas.

H. SORORCULA (OBBA), von Martens, Ostas. Zool. II. p. 294, pl. 17, fig. 4; Pfr. Mon. Hel. V. p. 405.

Celebes.

H. KOBELTIANA, Pfr. Malak. Bl. XVIII. 1871, p. 124; Novit. Conch. IV. p. 73, No. 760, pl. 121, figs. 12-13; Pfr. Mon. Hel. VII. p. 456.

Ceram.

Section 69, Trachia.

H. MALAYANA, O. von Möllendorff, Jour. As. Soc. Beng. 1886, LV. p. 303.

Perak, Malay Peninsula.

H. PENANGENSIS, Stol. Jour. As. Soc. Beng. XLII. 1873, p. 24, pl. 3, fig. 1; Pfr. Mon. Hel. VII. p. 399.

Penang.

Section 72, Planispira.

H. EXCEPTIUNCULA, Fér. pr. 176, Hist. pl. 70, fig. 1, pl. 73A, fig. 1; Pfr. Symb. III. p. 75; Mon. Hel. I. p. 311; Chemn. 2nd edit. Helix No. 453, pl. 76, figs. 1-3 = *Planispira exceptiuncula*, Beck, Index, p. 29.

Moluccas.

H. PHEYNE, Pfr. Nomen. Hel. p. 182, No. 2530 = *H. exceptiuncula* var. Fér. Hist. pl. 73A. fig. 1 = *H. phryne*, Pfr. Proc. Zool. Soc. 1861, p. 386, pl. 37, fig. 7 = *Planispira phryne*, Wallace, Proc. Zool. Soc. 1865, p. 409 = *Helix phryne*, Pfr. Mon. Hel. V. p. 311.

Ternate; Gilolo.

H. FLAVIDULA, von Mart. = *H. flaveola*, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 525 (not Kryn, 1837) = *H. flavidula*, von Mart. Günth. Zool. Jahresber. 1864; (*Planispira*) Ostas. Zool. II. p. 302, pl. 14, fig. 4; Pfr. Mon. Hel. V. p. 378.

Maros, Celebes.

H. QUADRIFASCIATA, Le Guill. Revue Zoologique, 1842, p. 141; Pfr. Mon. Hel. I. p. 381.

Ternate; Halmahera.

H. ENDOPTYCHA, von Mart. Monatsber. Berl. Ak. 18th Ap. 1864, p. 268; (*Planispira*), Ostas. Zool. II. p. 301, pl. 14, fig. 2; Pfr. Mon. Hel. V. p. 383.

Ternate; Batjan (? Batchian).

H. ZONALIS (*HELICELLA*), Fér. pr. 175, Hist. pl. 70, fig. 3; Pfr. Symb. II. p. 42; Mon. Hel. I. p. 380; Chemn. 2nd edit. *Helix* No. 24, p. 50, pl. 6, figs. 14-15 = *H. zonaria*, Chemn. IX. Pt. 2, p. 140, pl. 132, fig. 1188 = *Planispira zonalis*, Beck, Index, p. 30.

Gilolo.

H. (*DORCASIA*) COMPTA, H. Adams, Proc. Zool. Soc. 1865, p. 414, pl. 21, fig. 8; Pfr. Mon. Hel. V. p. 380.

Batchian.

H. KURRI, Pfr. Proc. Zool. Soc. 1847; Mon. Hel. I. p. 386.

Ceram.

H. ZONARIA, L. Syst. Nat. 12th edit. p. 1245, No. 681; (*Helicella*), Fér. pr. 177, Hist. pl. 71, figs. 6-10, pl. 73, figs. 3-10; Lamarck, 37, p. 75, Desh. edit. p. 44; Fér. Voy. de Freycin. Zool. p. 469, pl. 67, figs. 14-15; Quoy and Gaim. Astrol. II. p. 104, pl. 8, fig. 14; Chemn. 2nd edit. *Helix* No. 569, pl. 14, figs. 11-12, pl. 90, figs. 13-18 = *Planispira zonaria*, Beck, Index, p. 30 = *Pusiodon zonaria*, Swains. Malac. p. 330: Knorr, Vergnüg. V. p. 33, pl. 21, fig. 41; Pfr. Mon. Hel. I. p. 386.

Amboyna; Ceram; Buru.

H. FASCIOLATA, Lesson (?), Voy. Coq. Zool. II. 1, p. 311 (?); (*Planispira*), von Mart. Ostas. Zool. II. p. 314; Pfr. Mon. Hel. V. p. 505.

Moluccas.

H. COLLIS, Mouss. in coll. Pfr. Novit. Conch. IV. Fasc. 39, p. 36, No. 708, pl. 117, figs. 1-3 = *H. zonaria*, var. von Mart. Ostas. Zool. Moll. p. 312 = *H. collis*, Pfr. Mon. Hel. VII. p. 444

Amboyna.

H. COLUBER, Beck, = *Planispira coluber*, Beck, Index, p. 30 = *Helix coluber*, Chemn. 2nd edit. Helix No. 23, p. 49, pl. 6, figs. 8-9 = *H. zonaria*, Chemn. IX. Pt. 2, p. 140, pl. 132, fig. 1189; var. Fér. Hist. pl. 73, figs. 1-2; Knorr, Vergnüg. V. p. 33, pl. 21, fig. 3 = *H. coluber*, Pfr. Mon. Hel. I. p. 386.

Gilolo.

H. MERSISPIRA, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 525; (*Planispira*), Ostas. Zool. II. p. 303, pl. 14, fig. 8; Pfr. Mon. Hel. V. p. 388.

Island of Moti, Moluccas.

H. AURITA, von Mart. Monatsber. Berl. Ak. 18th April, 1864, p. 269; (*Chloritis*), Ostas. Zool. II. p. 316, pl. 16, fig. 12; Pfr. Mon. Hel. V. p. 389.

Moti Island, Moluccas.

H. GUTTATA, Le Guill. Revue Zool. 1842, p. 141; Pfr. Mon. Hel. I. p. 388.

Ceram.

H. ZEBRA, Pfr. Zeitschr. f. Malak. 1850, p. 83; Chemn. 2nd edit. Helix No. 875, pl. 135, figs. 16-18; Reeve, Conch. Icon. No. 499, pl. 92 = *H. zonaria*, var. Fér. Hist. pl. 73, fig. 5? = *H. zebra*, Pfr. Mon. Hel. III. p. 246.

Ceram; Goram.

H. EXPANSA, Pfr. Proc. Zool. Soc. 1861, p. 22; Novit. Conch. p. 165, No. 262, pl. 45, figs. 4-6; (*Chloritis*), von Mart. Ostas. Zool. II. p. 286, pl. 14, fig. 3 = *H. anozona*, von Mart. Monatsber. Berl. Ak. 18th Ap. 1864, p. 269 = *Planispira expansa*, Wallace, Proc. Zool. Soc. 1865, p. 409 = *Helix expansa*, Pfr. Mon. Hel. V. p. 391.

Batchian.

H. MARGARITUS, Pfr. Zeitschr. f. Malak. 1850, p. 83; Chemn. 2nd edit. Helix No. 876, pl. 135, figs. 19-21; Pfr. Mon. Hel. III. p. 246.

Moluccas.

H. EMBRECHTIANA, Mouss. in coll.; Pfr. Novit. Conch. IV. p. 39, No. 710, pl. 117, figs. 7-9; Mon. Hel. VII. p. 446 (erroneously marked p. 746 in Nomen. Hel.)

Moluccas.

Section 73, Chloritis.

H. ZODIACA, Fér. (*HELICELLA*) pr 184, Hist. pl. 75, fig. 2; Pfr. Sym. III. p. 78 = *H. zodiacus*, Wood, Suppl. pl. 7, fig. 52 = *Ampelita zodiaca*, Beck, Index, p. 30 = *Helix zodiaca*, Pfr. Mon. Hel. I. p. 373.

Celebes.

H. TUBA, Albers, Malak. Bl. 1854, p. 214; Pfr. Novit. Conch. I. p. 25, No. 41, pl. 7, figs. 1-3; (*Ampelita*), Pfr. Vers. p. 137; Mon. Hel. IV. p. 288.

Celebes.

H. BULBULUS, Mouss. = *H. bulbus*, Mouss. Jav. Moll. p. 113, pl. 21, fig. 5 = *H. bulbulus*, Mouss. MSS.; Pfr. Mon. Hel. III. p. 271.

Maros, Celebes.

H. UNGULINA, L. Syst. ed. 10, p. 772, ed. 12, p. 1245; Pfr. Mon. Hel. I. p. 383.

Ceram.

H. UNGUICULASTRA, von Martens, Monatsber. Berl. Ak. 18th July, 1864, p. 524; (*Chloritis*), Ostas. Zool. II. p. 281, pl. 14, fig. 1; var. *pilosa*, von Mart. Ostas. Zool. II. p. 282; Pfr. Mon. Hel. V. p. 386.

Amboyna and Buru.

H. CERAMENSIS, Pfr. Proc. Zool. Soc. 1861, p. 192; (*Chloritis*), von Mart. Ostas. Zool. II. p. 283 = *Semicornu ceramense*, Wallace, Proc. Zool. Soc. 1865, p. 410 = *Helix ceramensis*, Pfr. Mon. Hel. V. p. 386.

Ceram.

H. UNGUICULA, (*HELICELLA*), Fér. pr. 191, Hist. pl. 76, figs. 3-4; Lamarck, Desh. edit. 151, p. 99; Desh. in Fér. Hist. p. 12; Chemn. 2nd edit. *Helix* No. 38, pl. 8, figs. 10-11 = *H. unguilina*, Chemn. IX. P. 2, p. 81, pl. 125, figs. 1098-99 = *Chloritis unguicula*, Beck, Index, p. 29 = *Helix unguicula*, Pfr. Mon. Hel. I. p. 384.

Amboyna.

H. FLEXUOSA, Pfr. Proc. Zool. Soc. 1855, p. 112; (*Planispira*), Pfr. Vers. p. 136; Mon. Hel. IV. p. 292.

Borneo.

H. MARTENSI, Pfr. Proc. Zool. Soc. 1861, p. 193; (*Chloritis*), von Mart. Ostas. Zool. II. p. 279; = *Planispira martensi*, Wallace, Proc. Zool. Soc. 1865, p. 409; = *Helix martensi*, Pfr. Mon. Hel. V. p. 389.

Ceram.

H. UNGUICULINA, von Mart. Malak. Bl. X. 1863, p. 135; (*Chloritis*) Ostas. Zool. II. p. 278, pl. 14, fig. 5; Pfr. Mon. Hel. V. p. 390.

Buru.

H. BIOMPHALA, Pfr. Proc. Zool. Soc. 1862, p. 272; (*Chloritis*) von Martens, Ostas. Zool. II. p. 279 = *Semicornu biomphalum*, Wallace, Proc. Zool. Soc. 1865, p. 410 = *Helix biomphala*, Pfr. Mon. Hel. V. p. 391.

Ceram.

H. QUADRIVOLVUS, von Mart. Monatsber. Berl. Ak. 16th Jan. 1865, p. 53; (*Chloritis*), Ostas. Zool. II. p. 288, pl. 14, fig. 6; Pfr. Mon. Hel. V. p. 392.

Borneo.

Section 77, *Dorcasia*.

H. ARGILLACEA, (*HELICOGENA*), Fér. pr. 38, Hist. pl. 26, figs. 1-2; Lamarck, 53, p. 80, Dh. edit. p. 50; Fér. Voy. Freycin. Zool. p. 468, pl. 67, figs. 6-7; Chemn. 2nd. edit. *Helix* No. 326, pl. 58,

figs. 4-5 = *Galaxias argillacea*, Beck, Index, p. 42 = *Helix argillacea*, var. Fér. pl. 26, fig. 3; Pfr. Mon. Hel. I. p. 320.

Timor; Rawak; Flores.

H. TRANSVERSALIS, Mouss. Jour. Conch. VI. 1857, p. 158, pl. 6, fig. 5; Pfr. Mon. Hel. IV. p. 350.

Bali.

Section 78, Camaeana.

H. TRAILLI, Pfr. Proc. Zool. Soc. 1855, p. 107, pl. 32, fig. 4; (*Camaena*), Vers. p. 138; Mon. Hel. IV. p. 256.

Palawan Passage, near Borneo.

H. GERMANUS, Reeve, = *H. orientalis*, Ad. and Reeve, Voy. Samarang, Moll. p. 61, pl. 16, fig. 4 (not Gray) = *H. germanus*, Reeve, Conch. Icon. No. 385, pl. 74; Chemn. 2nd edit. Helix No. 925, pl. 142, figs. 1-2; Pfr. Mon. Hel. III. p. 222.

Borneo (?) Japan.

H. PALAWANICA, Pfr. Proc. Zool. Soc. 1855, p. 107, pl. 32, fig. 7; (*Camaena*), Pfr. Vers. p. 138; Mon. Hel. IV. p. 261.

Palawan Passage, near Borneo.

H. CONDORIANA, Crosse and Fisch. Jour. Conch. XI. 1863, p. 351, pl. 14, fig. 1; Pfr. Mon. Hel. V. p. 377.

Pulo Condor, Cochin-China.

Section 80, Geotrochus. Sub-section 1, Geotrochi genuini.

H. PERAKENSIS, Crosse, Jour. de Conch. XXVII. 1879, p. 199, pl. 8, fig. 4 (*Geotrochus*).

This is a small regularly conical shell, 10 millimetres in diameter and 11 high. Dr. Hungerford has some doubts about its being a *Geotrochus*, a group which has not yet been observed in the Indian region. The figure gives the idea rather of *Satsuma* (or *Fruticotrochus*, Kol.), which group is widely spread

in China, and might very well range into the Malay Peninsula, hitherto so little explored. Von Moll. Jour. As. Soc. Beng. LV. 1886, p. 303.

Perak.

H. SWETTENHAM, De Morgan, Le Naturaliste, VII. 1885, p. 68; O. von Möllendorff, Jour. As. Soc. Beng. LV. 1886, p. 304, who says the species may be a *Trochomorpha* or a *Plectotropis*. He makes the same observation with regard to the three following species:—

H. THIEROTI, De Morgan, l.c.

Gunong-Chura, north of Ipoh, Kinta Valley.

H. HARDOUINI, De Morgan, l.c.

Valley of the Kinta, between Lahat and Ipoh.

H. LAHATENSIS, De Morgan, l.c.

Same locality.

H. ANTIQUA, Ad. and Reeve, Voy. Samarang, Moll. p. 61, pl. 16, fig. 1; Reeve, Conch. Icon. No. 402, pl. 77; Chemn. 2nd edit. Helix No. 949, pl. 144, figs. 14-15; Pfr. Mon. Hel. III. p. 172.

Unsang, Borneo.

Sub-section 2, Perforati.

H. EUCHROES, Pfr. Malak. Bl. 1854, p. 57; Reeve, Conch. Icon. No. 1346, pl. 192; Pfr. Novit. Conch. I. p. 2, No. 3, pl. 1, figs. 7-8; (*Geotrochus*), Pfr. Vers. p. 145 = *Acavus euchroës* (*Geotrochus*), H. and A. Adams, Gen. II. p. 196 = *Helix euchroës*, Pfr. Mon. Hel. IV. p. 256.

Indian Archipelago.

H. LENTA, Pfr. = *H. pileus*, Pfr. Mon. Hel. I. p. 324; var. Chemn. new edit. Helix I. p. 157, pl. 40, fig. 5 = *H. lenta*, Pfr. Malak. Bl. 1854, p. 57; (*Geotrochus*), Pfr. Vers. p. 145; Mon. Hel. IV. p. 257 = *Acavus lentus* (*Geotrochus*), H. and A. Adams, Gen. II. p. 196.

Moluccas.

H. STURSIANA, Shuttlew. Bern, Mittheil. 1852, Aug. p. 200 ;
Pfr. Mon. Hel. III. p. 179.

Amboyna.

H. PILEOLUS, Fér. Hist. pl. 63 A. figs. 1-2 (not Pfr. Mon. H. I. p. 324) ; Pfr. Malak. Bl. VII. 1860, p. 64 ; von Mart. Ostas. Zool. II. p. 321, pl. 17, figs. 8-9 ; Pfr. Mon. Hel. V. p. 326.

Batchian.

H. ZOAE, Pfr. Malak. Bl. XII. 1865, p. 121 ; Novit. Conch. Fasc. 23, p. 274, No. 386, pl. 67, figs. 16-17 = *H. pileolus*, Pfr. Mon. Hel. I. p. 324.

Moluccas.

H. SUBVITREA, Pfr. Proc. Zool. Soc. 1854, p. 148 ; Reeve, Conch. Icon. No. 1361, pl. 194 ; Pfr. Novit. Conch. I. p. 8, No. 13, pl. 3, figs. 8-9 ; (*Geotrochus*) Pfr. Vers. p. 145.

Moluccas.

H. RHYNCHOSTOMA, Pfr. Proc. Zool. Soc. 1861, p. 21, pl. 2, fig. 6 ; Novit. Conch. p. 166, No. 264, pl. 45, figs. 9-11 ; Mon. Hel. V. p. 328.

Batchian.

H. LANCEOLATA, Pfr. Proc. Zool. Soc. 1861, p. 386, pl. 37, fig. 6 ; von Mart. Ostas. Zool. II. p. 320, pl. 17, fig. 7 ; Pfr. Mon. Hel. V. p. 328 = *Papuina lanceolata*, Wallace, Proc. Zool. Soc. 1865, p. 411.

Gilolo ; Moti.

H. NODIFERA, Pfr. Proc. Zool. Soc. 1861, p. 21, pl. 2, fig. 4 ; Novit. Conch. p. 166, No. 263, pl. 45, figs. 7-8 = *Papuina nodifera*, Wallace, Proc. Zool. Soc. 1865, p. 411 = *Helix nodifera*, Pfr. Mon. Hel. V. p. 328.

Batchian.

H. VITREA, Fér. (*HELICIGONA*), pr. 145, Hist. pl. 64, fig. 4 ; Chemn. 2nd edit. Helix No. 459, pl. 76, figs. 18-19 ; Pfr. Mon. Hel. I. p. 326.

Ternate ; Moti ; Batchian.

H. ALBULA, Le Guill. Revue Zool. 1842, p. 139 ; Pfr. Mon. Hel. I. p. 328.

Ternate.

Sub-section 3, Pseudopartula.

H. (BULIMUS) GALERICULUM, Mouss. (Pfr. Nomenclator Hel. p. 197, No. 83) = *Bulimus galericulum*, Mouss. Jav. Moll. p. 34, pl. 3, fig. 5 ; Pfr. Mon. Hel. III. p. 302.

Pardana, Java.

Section 85, Corasia.

H. EXTENSA, Müll. Verm. II. p. 60, No. 254 (not Fér.) ; Gmel. Syst. p. 3631, No. 59 ; Lamarck, Hist. VI. p. 70, No. 18, Desh. edit. VIII. p. 37 ; Desh. in Fér. Hist. I. p. 246, No. 313, pl. 96, figs. 5-7 ; Chemn. 2nd edit. Helix No. 1090, pl. 160, figs. 6-7 ; Pfr. Mon. Hel. III. p. 192 = *Eurycratera extensa*, Beck, Ind. p. 46, No. 9.

Amboyna ; Goram.

H. LEUCOPHTHALMA, Pfr. Malak. Bl. XVII. 1870, p. 93 ; Novit. Conch. IV. p. 10, No. 681, pl. 111, figs. 8-9 = *Cochlostyla* (*Corasia*) *leucophthalma*, Paetel, Catal. 1873, p. 97 ; = *Helix leucophthalma*, Pfr. Mon. Hel. VII. p. 355.

Celebes.

H. LAIS, Pfr. Proc. Zool. Soc. 1853 ; Mon. Hel. III. p. 647. Island of Tukan Bessi.

11. COCHLOSTYLA, Fér. Prodromus, p. 47, Sub-genus of *Helix*.

Shell not umbilicated, oval, conical, ventricose, somewhat like a *Bulimus* with rather obtuse apex. Aperture large, ovate ; columella straight or slightly curved ; peristome reflected. About 214 species, generally characteristic of the Philippines and Indian Archipelago, some in India, others in Cochin China, while a few extend into the Pacific as far as Fiji and New Caledonia. (?)

COCHLOSTYLA THOMSONI, Pfr. Nomen. Hel. p. 205, No. 2116 = *Helix thomsoni*, Pfr. Malak. Bl. XVIII. 1871, p. 120; Novit. Conch. IV. p. 70, No. 756, pl. 121, figs. 1-2 = *Cochlostyla thomsoni* (*Corasia*), Paetel, Catal. 1873, p. 97 = *Helix thomsoni*, Pfr. Mon. Hel. VII. p. 308.

Island of Tukan Bessi.

C. INDUSIATA, Pfr. Nomencl. Hel. p. 205, No. 2489 = *Helix indusiata*, Pfr. Malak. Bl. XVIII. 1871, p. 121; Novit. Conch. IV. p. 71, No. 757, p. 121, figs. 3-4; Mon. Hel. VII. p. 355.

Tukan Bessi.

C. RUSTICA, Mouss. = *Bulimus rusticus*, Mouss. Jav. Moll. 115, pl. 22, fig. 1; Reeve, Conch. Icon. No. 574, pl. 78; Pfr. Mon. Hel. III. p. 296 = *Cochlostyla rustica*, Pfr. Nomen. Hel. p. 208, No. 17.

Java.

C. TRAILLI, Pfr. = *Bulimus trailli*, Pfr. Proc. Zool. Soc. 1856, p. 106, pl. 32, fig. 6; (*Amphidromus*), Pfr. Vers. p. 146; Mon. Hel. IV. p. 362.

Borneo.

C. PALAWANENSIS, Pfr. = *Bulimus palawanensis*, Pfr. Mon. Hel. IV. p. 372.

Palawan.

C. LIBROSA, Pfr. = *Bulimus librosus*, Pfr. Proc. Zool. Soc. 1856, p. 388; Mon. Hel. IV. p. 375.

Palawan.

12. BULIMUS, Scopoli, Deliciæ Floræ et Faunæ Insubricæ.

(Lombardy) Vol. I. p. 67.

Shell oval, oblong, or turriculate, solid, sub-perforate or imperforate; whorls few; ultimate ventricose wide; aperture longitudinal; columella broad, rarely plicate; peristome thickened, reflected; margins usually joined by a callus.

Animal similar to the animal of *Helix*, with a simple jaw.*

Radula similar also to *Helix*. Between 300 and 400 species, mostly South American.†

* It cannot be questioned that Scopoli rather than Adanson should be given as the authority for this genus, although the author of the work referred to in the text says distinctly, "Proprium itaque ex his constituo, et duce celeberrimo Adansonio Bulinos voco, ut eo facilius adnoscantur. Solam testam nec animal inhabitans vidi, quod diversum esse à Limace affirmat Adansonius." p. 67.

Cf. *Histoire Naturelle du Sénégal* (Paris, 1757), where M. Adanson writes the name Bulin. The Latin (?) name on pl. 1 looks very much like Bulinus in consequence of the strokes of the "n" and "u" being confused. A brief account of this curious work may be useful. It is divided into two parts; the first of 190 pages is devoted to the "Voyage au Sénégal;" the second part is a "Histoire des Coquillages," consisting of:—1. Préface, 28 pp.; 2. Définitions des parties des coquillages, 32 pp. (a most useful series of observations well deserving of study); 3. Table des rapports ou des combinaisons autrement appelés systèmes ou arrangements méthodiques, 26 pp.; 4. Table chronologique des auteurs, 4 pp.; 5. Division générale, 4 pp.; 6. Coquillages (including index), 275 pp.; 7. Plates, 19 pp. At p. 5 of the Coquillages is a full description which extends to three pages of Le Bulin or Bulinus, from which only the first sentence need be cited, as it shows the author is dealing with a fresh-water shell. "Je donne le nom de Bulin à un petit coquillage d'eau douce, qui vit communément sur la lentille de marais et sur le lemna, dans les marais et les étangs de Podor." Therefore Scopoli's genus, spelled differently, is justly regarded as new.

† It is a curious feature in the Philippine and some of the Malay species that the varieties of pattern, which constitute their chief ornament, reside only in the epidermis. The colours of the shell rarely describe any sort of configuration; they are mostly blended into a uniform tint, over which a fanciful pattern is produced by the epidermis forming a double porous membrane in some places, and a single one only in others, developed, moreover, with the same continuous regularity as the textile marking of a Volute or Cone. This phenomenon is easily detected by immersing the shell in water, when the light portion or upper porous layer of epidermis becomes saturated, and the ground color of the shell is seen through it; as the moisture evaporates, the epidermis resumes its light appearance. Sir David Brewster, in reply to a letter from Mr. Broderip on this subject, says: "It appears to me, from very careful observations, that the epidermis consists of two layers, and that it is only the upper layer which is porous wherever the pattern is white. These white or porous portions of the

Section Amphidromus.

BULIMUS LORICATUS, Pfr. Proc. Zool. Soc. 1854, p. 293;
(*Amphidromus*) Pfr. Vers. p. 147; Mon. Hel. IV. p. 372.

Java.

B. PERVERSUS, L. = *Helix perversa*, L. Syst. Nat. 12th edit. Species, No. 136. Sub-umbilicate, ovate, oblong, often sinistral, colour various, but generally uniformly light green, lemon yellow, or white; or marked variously with spots or bands, such as a deep brown oblique streak, white with red spot, red lip, white lip, variously spotted with a bluish throat. This well-known and widely-spread shell which is found all through the Archipelago (Borneo?), Malay Peninsula, Moluccas and Burmah, was known to the early conchologists, twelve authorities being quoted by Linnæus for this species and *B. dextra*, which is evidently a variety. It is unnecessary to reproduce the authorities which occupy nearly two pages of Pfeiffer's Mon. Hel. (Vol. III. p. 308). It is very common about Malacca, and on wet days especially may be gathered off the leaves of the trees where it is with difficulty distinguished on account of the similarity of its colour. Without quoting authorities, it may be mentioned that it has been known by the following names:—*Bulimus*, *Helix*, *Limax*, *Orthostylus*, *perversa*, *dextra*, *sinistra*, *atricalloso*, *interrupta*, *aurea*, *citrina*, *sultana*, *javanica*, *macassariensis*.

B. LEUCOXARTHUS, von Mart. = *B. leucoxanthus*, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 526 (Reeve, Bul. f. 187 b: *dextra*.); Ostas. Zool. II. p. 348, pl. 20, figs. 11-12 (*sinistr.*); Pfr. Mon. Hel. VI. p. 18.

Java.

epidermis differ from the other parts of the upper layer only in having been deprived of, or in never having possessed, the element which gives transparency to the membrane; in the same manner as hydropathous opal has become white, from the expulsion of its water of crystallization." Reeve, Conch. Icon. *Bulimus*.

B. POLYMORPHUS (COCHLOSTYLA), Tapp. Canefri = *Cochlostyla polymorpha*, Tapp. Canefri, Malac. del viaggio della fregata Magenta, 1874, p. 82, pl. 2, figs. 4 a-b. = *Bulimus polymorphus*, Pfr. Mon. Hel. VIII. p. 23. M. H. Crosse (Jour. Conch. 1874, p. 320) regards this species as only a variety of *B. (Amphidromus) comes*, Pfr. of Cambodia.

Singapore.

B. MELANOMMA, Pfr. = *Helix flammea*, Chemn. IX. p. 94, fig. 927 = *Bulimus inversus*, Küst. pl. 6, fig. 3 (ex Chemn.) = *B. citrinus*, var. Reeve, Conch. Icon. pl. 31, fig. 187a = *B. elongatus*, Hombr. et Jacq. Voy. Pole Sud, Moll. pl. 8, figs. 3-4 (?) = *B. melanomma*. Pfr. Zeitsch. f. Malak. 1852, p. 95; Chemn. 2nd edit. Bul. No. 179, pl. 39, figs. 28-29; Pfr. Mon. Hel. III. p. 310.

Singapore; Borneo.

B. LINSTEDTI, Pfr. Proc. Zool. Soc. 1856, p. 388; Mon. Hel. IV. p. 374.

Malacca.

B. MUNDUS, Pfr. Zeitschr. f. Malak. 1853, p. 57; Mon. Hel. III. p. 651; Chemn. 2nd edit. Bul. p. 373, pl. 70, figs. 21-22.

Singapore.

B. BATAVIÆ (PARTULA), Grateloup, = *Partula bataviæ*, Grat. Act. Bord. XI. p. 425, pl. 2, fig. 12 = *Bulimus bataviæ*, Pfr. Mon. Hel. II. p. 40.

Java.

B. INVERSUS, Müll. = *B. inversus*, Mouss. Jav. Moll. p. 107; Pfr. Zeitschr. f. Malak. 1849, p. 132; (*Amphidromus*) Albers, Helic. p. 138; (*Helix*) Pfr. Mon. Hel. III. p. 318.

This has been as long known as *Bulimus perversus*, and has had the same synonyms applied to it.

Malacca; Singapore; Siam.

B. WINTERI, Pfr. Zeitschr. f. Malak. 1849, p. 135; Chemn. 2nd edit. Bul. No. 177, pl. 40, figs. 3-4; Pfr. Mon. Hel. III. p. 319.

Java.

B. TEYSMANNI, Mouss. MSS.; Pfr. Novit. Conch. IV. p. 32, No. 704, pl. 116, figs. 2-3; Mon. Hel. VIII. p. 40 = *B. winteri*, von Mart. Ostas. II. p. 353.

Moluccas.

B. HEERIANUS, Mouss. MSS.; Pfr. Novit. Conch. IV. p. 31, No. 703, pl. 116, fig. 4 = *B. winteri* var. von Mart. Ostas. Moll. pl. 20, fig. 10 (?) = *B. heerianus*, Pfr. Mon. Hel. VIII. p. 40.

Moluccas.

B. PALACEUS, v. d. Busch, in litt.; Mouss. Jav. Moll. p. 28, pl. 3, fig. 1; Pfr. Zeitschr. f. Malak. 1849, p. 136; Mon. Hel. III. p. 320; Chemn. 2nd edit. Bul. No. 178, pl. 40, fig. 6; (*Amphidromus*), Alb. Helic. p. 138 = *B. perversus*, Pfr. Mon. Hel. II. p. 37.

Java.

B. PURUS, Mouss. Jav. Moll. p. 29, pl. 3, fig. 2; Pfr. Novit. Conch. IV. p. 33, No. 705, pl. 116, fig. 6 = *B. palaceus*, Pfr. Mon. Hel. III. p. 320 = *B. winteri*, von Mart. Ostas. Moll. p. 354, ex parte = *B. purus*, Pfr. Mon. Hel. VIII. p. 41.

Java.

B. EMACIATUS (*AMPHIDROMUS*), von Mart. Ostas. Zool. II. p. 347, pl. 20, fig. 7; Pfr. Mon. Hel. VI. p. 25.

Java; Bali.

B. APPRESSUS, Mouss. in coll.; Pfr. Mon. Hel. VI. p. 26, No. 213b. (ex v. Mart.); (*Amphidromus*) von Mart. Ostas. Moll. p. 353; Pfr. Novit. Conch. IV. p. 34, No. 706, pl. 116, figs. 4-5; Mon. Hel. VIII. p. 42.

Java.

B. LÆVUS, Müll. = *Helix læva*, Müll. Verm. II. p. 95, No. 293; Chemn. IX. P. I, p. 103, pl. 111, figs. 940-49; Gmel. p. 3644,

No. 100 ; Dillw. Descr. Cat. II. p. 935, No. 112 ; (*Cochlogena*)
Fér. pr. 416 = *H. perversa*, Gmel. p. 3643 (e fig. Kämmer.) = *Bulimus*
laevus, Brug. Enc. Méth. I. p. 317, No. 31 ; Quoy et Gaim.
Astrol. II. p. 120, pl. 10, fig. 4 ; Lamarck, Desh. edit. 80, p. 260 ;
Küster, p. 15, pl. 9, figs. 7-16 = *Orthostylus laevus*, Beck, Ind.
p. 50, No. 15 ; Kämmerer, p. 125, pl. 10, fig. 3 = *B. laevus*, Pfr.
Mon. Hel. II. p. 39.

Timor.

B. SUSPECTUS, von Mart. Monatsber. Berl. Ak. 18th July,
1864, p. 526 ; Ostas. Zool. II. p. 362, pl. 21, fig. 8 ; Pfr. Mon.
Hel. VI. p. 27.

Kupang, Timor.

B. SUMATRANUS, von Mart. Monatsber. Berl. Ak. 18th July,
1864, p. 526 ; Ostas. Zool. II. p. 366, pl. 21, fig. 6 ; Pfr. Mon.
Hel. VI. p. 27.

Sumatra.

B. SINISTRALIS, Reeve, Conch. Icon. No. 603, pl. 81 ; Chemn.
2nd edit. Bul. No. 181, pl. 41, figs. 11-13 = *B. laevus*, var. Desh.
in Fér. Hist. pl. 161, figs. 11, 14-18 = *B. sinistralis*, Pfr. Mon.
Hel. III. p. 321.

Celebes ; Timor.

B. CONTRARIUS, Müller, = *Helix contrarius*, Müll. Verm. II.
p. 95, No. 292 (Swamm. pl. 7, No. 11) ; Gmel. Syst. p. 3644, No.
99 ; Fér. Voy. Freyc. p. 474, pl. 67, figs. 8-9 = *H. interrupta*
sinistrorsa, Chemn. IX. p. 101, figs. 938-939 = *Bulimus contrarius*,
Pfr. Mon. Hel. III. p. 327.

Macassar ; Timor ; Java.

B. PORCELLANUS, Mouss. Jav. Moll. p. 33, pl. 3, fig. 4 ;
(*Amphidromus*), Alb. Helic. p. 139 ; Chemn. 2nd edit. Bul. No.
182, pl. 41, figs. 14-15 ; Pfr. Mon. Hel. III. p. 328.

Java.

B. ADAMSII, Reeve, Conch. Icon. No. 73, pl. 13 ; Adams and
Reeve, Voy. Samarang, Moll. p. 58, pl. 15, fig. 1 ; Chemn. 2nd

edit. Bul. No. 105, pl. 31, figs. 11-12; Pfr. Nomen. Hel. p. 214, No. 300.

Borneo.

Family BULIMINIDA.

13. BULIMINA, Ehren. Symb. Phys. Oken Isis, 1833, p. 734, sub-genus, *Chilodontis*.

Shell solid, rimate, oblong conical, or fusiformly cylindrical; apex obtuse, horny, last whorl shorter than spire; aperture small, oblique, oval; peristome straight, labiate within, simple or dentate; lip rather expanded, columella reflexed and spread.

Animal similar to *Bulimus*, jaw arcuate and finely striate lengthwise; radula like *Helix*. About 350 species, which are divided into about a dozen sub-genera, of which four only belong to America or about an eighth of the species; the rest are in Europe and western Asia, with a few extending into the Indian Archipelago, belonging as far as known to the sub-genus *Ena*.

BULIMINA LORRAINI, Pfr. = *Bulimus lorraini*, Pfr. Proc. Zool. Soc. 1856, p. 332; Mon. Hel. IV. p. 468.

Penang.

B. SPILOZONA, von Mart. = *Bulimus (Rhachis) spilozonus*, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 527; Ostas. Zool. II. p. 368, pl. 21, fig. 13; Pfr. Mon. Hel. VI. p. 112.

Celebes; Timor.

B. GREGARIA, Ad. and Reeve, = *Bulimus gregarius*, Ad. and Reeve, Voy. Samarang, Moll. p. 58, pl. 14, fig. 4; Reeve, Conch. Icon. No. 612, pl. 83 (aliquantulum auct.); Pfr. Mon. Hel. III. p. 351.

Borneo; Japan.

B. GLANDULA, Mouss. = *Bulimus glandulus*, Mouss. Jav. Moll. p. 34, pl. 4, fig. 3; Pfr. Mon. Hel. III. p. 353.

Java.

B. APERTA, von Mart. = *Pupa aperta*, von Mart. Malak. Bl. X. 1863, p. 180 = *Buliminus apertus* (*Napaesus*), von Mart. Ostas. Zool. II. 370, pl. 22, fig. 6 = *Bulimus apertus*, Pfr. Mon. Hel. VI. p. 61.

Timor.

14. STENOGYRA, Shuttleworth, Diagnosis Nov. Moll. No. 6,
p. 137.

Shell elongate, turricate; whorls numerous; apex obtuse or truncate; aperture oval, small; columella thin, straight; peristome simple, sharp.

Animal like *Achatina*. Jaw finely plicate or ribbed; radula with median tooth, very small; laterals tricuspid with a rather long central cusp; marginals short, tricuspid. About 250 species, of world-wide distribution. The species of the Malayan region belong to the section *Opeas*, in which the shell is small, thin, subulate, covered with small ribs.

STENOGYRA GRACILIS, Hutton, Jour. As. Soc. Beng. III. p. 84 = *Bulimus gracilis*, Hutton, l.c. = *B. indicus*, Pfr. Mon. Hel. II. p. 157; Chemn. pl. 21, figs. 18-19 = *B. aper*, Mouss. = *Spiraxis gracilis*, Blanford, Contrib. Ind. Malac. = *Bulimus cereus*, Reeve, Conch. Icon. Achatina, pl. 17, fig. 81.

Java; Bukit Pondok, Perak.

S. (SUBULINA) TCHEHELENSIS, De Morgan, Le Naturaliste, 1885, p. 69 = *S. (Opeas) terebralis* (?), Theobald (? n.sp.), G. Nevill, Handl. Moll. Ind. Mus. 1878, p. 166; O. F. von Möllendorff, Jour. As. Soc. Beng. LV. p. 304.

This is a fine subulate shell, more than an inch long with 10 or 12 whorls.

Mount Chehel, near the River Plus and Bukit Pondok, Perak.

S. ARCTISPIRA (OPEAS), von Mart. Ostas. Zool. II. p. 374, pl. 22, fig. 10 = *Bulimus arctispirus*, Pfr. Mon. Hel. VI. p. 102.

Java.

S. DENSESPIRATA, Mouss. = *Bulimus densespiratus*, Mouss. Jour. Conch. VI. 1857, p. 159 ; Pfr. Mon. Hel. IV. p. 497.

Buitenzorg, Java.

S. ACUTISSIMA, Mouss. = *Bulimus acutissimus*, Mouss. Jour. Conch. VI. 1857, p. 159 ; Pfr. Mon. Hel. IV. p. 453.

Buitenzorg, Java.

S. LAXISPIRA, von Mart. Ostas. Zool. II. p. 373, pl. 22, fig. 14 = *Bulimus laxispirus*, Pfr. Mon. Hel. VI. p. 92.

Sumatra.

S. HOCHSTETTERI, Zelebor, = *Bulimus hochstetteri*, Zeleb. Reise der Freg. "Novara;" Pfr. Mon. Hel. VI. p. 107.

Java.

S. ACHATINACEA, Pfr. = *Bulimus achatinaceus*, Pfr. Symb. III. p. 82 ; Mon. Hel. II. p. 156.

Java ; Borneo.

15. RHODINA, De Morgan, Le Naturaliste, 1885, p. 68.

Shell cylindraceous, striate ; whorls numerous, last much larger ; aperture triangular ; columella reflected, very prominent ; peristome continuous.

M. de. Morgan has founded this new genus for a curious shell like *Stenogyra*. He thinks it is related to *Rhodea* by the absence of keel and the cornet-like aperture.

RHODINA PERAKENSIS, De Morgan, l.c.

Shell cylindrical, fragile, horny, yellow, with 10 regularly increasing whorls very regularly and distinctly striate, the suture linear and well marked ; the aperture triangular, oblique ; peristome thin, not reflected.

Long. 25, diam. of last whorl $4\frac{1}{2}$, long. of aperture 5, lat. 3 mill.

Limestone rocks of Gunong Tcheura, near Ipoh, Kinta Valley, under dead leaves.

Family CIONELLIDA.

16. GLESSULA, Albers, Helic. p. 194.

Shell ovate, oblong; thin translucent; spire pyramidal; apex obtuse; whorls numerous, last inflated; columella short, arcuate, abruptly truncate.

Fifty-nine species in India, Malayan region, and West Africa.

GLESSULA WALLACEI, Pfr.=*Achatina wallacei* (*Electra*), Pfr. Malak. Bl. 1855, p. 168; Novit. Conch. I. p. 82, No. 140, pl. 22, figs. 9-10; Mon. Hel. IV. p. 606.

Sarawak, Borneo.

G. SUMATRANA, von Mart.=*Achatina sumatrana*, von Mart. Ostas. Zool. II. pl. 22, fig. 5 = *Cionella sumatrana*, von Mart. Monats. Berl. Ak. 18th July, 1864, p. 527 = *Achatina sumatrana*, Pfr. Mon. Hel. VI. p. 225.

Sumatra.

G. JAVANICA, Reeve, = *Achatina javanica*, Reeve, Conch. Icon. No. 79, pl. 17; Pfr. Mon. Hel. III. p. 493.

Java.

Family PUPIDA.

17. PUPA, Lamarck, Syst. Anim. s. Vert. 1st edit. p. 88.

Shell usually very small, cylindrical or oval oblong; umbilicus slight or a mere slit, striate, plicate or ribbed, brown or horn-colour; columella plaited or sub-dentate; lip reflected, dentate or plaited within; peristome joined usually by a callosity.

Animal with a short foot, pointed behind, lower tentacles short; jaw smooth or finely striated, often with a superior appendage like *Succinea*.

Radula resembling *Helix*; the central and lateral teeth similar, tricuspid; marginals very short and denticulated.

PUPA ASCENDENS, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 528 ; (*Anostomella*), Ostas. Zool. II. p. 386, pl. 22, fig. 23 ; Pfr. Mon. Hel. VI. p. 297.

Amboyna.

P. ORCELLA (PUPISOMA), Stol. Jour. As. Soc. Beng. XLII. 1873, p. 33, pl. 3, fig. 2 : Pfr. Mon. Hel. VIII. p. 358.

Penang.

P. MORELETI, A. D. Brown, Jour. Conch. XVIII. 1870, p. 393 = *Vertigo moreleti*, Issel, Moll. Born. p. 52 = *Pupa moreleti*, Pfr. Mon. Hel. VIII. p. 391.

Labuan.

P. MALAYANA, Issel, = *Vertigo malayanus*, Issel, Moll. Born. 1874, p. 53, pl. 5, figs. 30-32 = *Pupa malayana* (*Vertigo*), Pfr. Mon. Hel. VIII. p. 404.

Borneo.

P. PALMIRA (SCOPELOPHILA), Stol. Jour. As. Soc. Beng. XLII. 1873, p. 32 ; Pfr. Mon. Hel. VIII. p. 409.

Penang.

18. HYPSELOSTOMA, Benson.

Ann. and Magaz. Nat. Hist. 1856, Feb. p. 130, also, Ap. p. 342 ; H. and A. Adams, Gen. II. p. 640. = *Tanytoma*, Benson, l.c.

Shell convolute, conical, perforate, last whorl free, opening upwards, protracted ; aperture trumpet-like and dentate ; peristome horizontal, expanded.

Three species collected in Burmah.

HYPSELOSTOMA BENSONIANUM, W. Blanford, Contr. Ind. Mal. IV. 1863, p. 8 ; Pfr. Mon. Hel. V. 1868, p. 437 ; Conch. Indica, pl. 8, fig. 2 ; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 306.

Perak.

19. CLAUSILIA, Draparnaud, Hist. Nat. d. Moll. terrest. et fluv.
pp. 24, 29, 68.

Shell fusiform, usually sinistral; aperture elliptical or pyriform with a posterior sinus contracted by lamellæ closed when adult by a moveable shelly plate (*Clausilium*); peristome continuous, reflected.

Animal with a short obtuse foot; upper tentacles short, lower small; lung and reproductive orifices on the left side; jaw finely grooved.

Radula like *Helix*, but both rows very numerous, sometimes as many as 120×50 . About 700 species, of world-wide distribution. The peculiarity of the genus is the *Clausilium*, which is developed in the adult state. The animal secretes an elastic calcareous filament attached to the columella, round which it makes a half turn. At the free end is a spoon-shaped lamina, smaller than the aperture, but fitting it. Its elasticity enables the animal to push it on one side when walking, and to use it as a door when within the shell, securing it against intrusion.

CLAUSILIA MOLUCCENSIS, von Mart. Monatsber. Berl. Ak. Apr. 1864, p. 270; (*Phaedusa*), Ostas. Zool. II. p. 381, pl. 22, fig. 19; Pfr. Mon. Hel. VI. p. 412.

Halmahera; Ternate.

CL. PENANGENSIS (PHAEDUSA), Stol. Jour. As. Soc. Beng. XLII. 1873, p. 27, pl. 3, figs. 4-6; Pfr. Mon. Hel. VIII. p. 465.

Penang Hill.

CL. SUMATRANA, von Mart. Monatsber. Berl. Ak. April, 1864, p. 270; (*Phaedusa*), Ostas. Zool. II. p. 379, pl. 22, fig. 17; Pfr. Mon. Hel. VI. p. 410.

Sumatra.

CL. HELDII, Küst. p. 27, pl. 2, figs. 29-31 = *Cl. javana*, Pfr. Mon. Hel. II. p. 405.

Java.

CL. JAVANA, Pfr. Symb. I. p. 49; Küst. p. 26, pl. 1, figs. 26-28 = *Cl. heldii*, Küst. p. 27, pl. 2, figs. 29-31 = *Cl. javana*, Pfr. Mon. Hel. II. p. 405.

Java.

CL. CORTICINA, v. d. Busch, MSS.; Pfr. Symb. II. p. 60; Küst. p. 26, pl. 2, figs. 24-25; Pfr. Mon. Hel. II. p. 404.

Java.

CL. BORNEENSIS, Pfr. Proc. Zool. Soc. 1854, p. 296; (*Phaedusa*), Pfr. Vers. p. 181; Mon. Hel. IV. p. 736.

Borneo.

CL. JUNGHUHN, Phil. in Küst. Mon. p. 23, pl. 2, figs. 5-7; Pfr. Mon. Hel. II. p. 405.

Java.

CL. CORNEA, Phil. in Küst. Mon. p. 22, pl. 2, figs. 1-4; Pfr. Mon. Hel. II. p. 405.

Java.

CL. EXCURRENS, von Mart. Monatsber. Berl. Ak. 18th July, 1864, p. 527; Ostas. Zool. II. p. 384, pl. 22, fig. 16; Pfr. Mon. Hel. VI. p. 480.

Kepahiang, Sumatra.

CL. FILICOSTATA (PHAEDUSA), Stol. Jour. As. Soc. Beng. XLII. 1873, p. 28, pl. 3, figs. 7-8; Pfr. Mon. Hel. VIII. p. 471.

Penang Hill.

CL. OBESA (PHAEDUSA), von Mart. Ostas. Zool. II. p. 380 (not Pfr.) = *Cl. obesa*, Pfr. Mon. Hel. VI. p. 411.

Indian Archipelago.

CL. ORIENTALIS, v.d. Busch, MSS.; Pfr. Symb. II. p. 60; Küst. p. 25, pl. 2, figs. 17-19; Pfr. Mon. Hel. II. p. 414.

Java.

CL. SCHWANERI, Herklots, Mus. Lugd. Bat.; (*Phaedusa*), von Mart. Ostas. Zool. II. p. 382; Pfr. Mon. Hel. VI. p. 468.

Borneo.

CL. (PSEUDONENIA) FILICOSTATA, Stol. Jour. As. Soc. Beng. XLII. 1873, p. 28, pl. 3, figs. 7-8; var. *tenuicosta*, G. Nevill, Handl. Moll. Ind. Mus. 1878, p. 183; H. Crosse, Jour. Conch. XXVII. 1879, p. 337; O. F. von Möll. Jour. As. Soc. Beng. LV. 1886, p. 306.

Bukit Pondok, Perak.

"The few badly preserved specimens which Dr. Hungerford found seem to justify Nevill's classification of the Perak form as a variety of the Penang *Cl. filicostata*." O. F. von Möll. l.c.

Family SUCCINEIDEA.

The shells of this family are thin, horny, oval, oblong; spire only slightly developed, mouth very wide, oval; columella simple not truncate, peristome with a thin edge.

20. SUCCINEA, Draparnaud, Tableau Moll. pp. 32, 55.

Shell imperforatè, thin, ovate or oblong; spire small; aperture large, obliquely oval; columella and peristome simple, acute.

Animal large, tentacles short and thick, foot broad; lingual teeth like *Helix*. Inhabits damp places, but rarely enters the water.

SUCCINEA BORNEENSIS, Pfr. Proc. Zool. Soc. 1851; Mon. Hel. III. p. 11.

Borneo.

S. TAYLORI, Pfr. Proc. Zool. Soc. 1851; Mon. Hel. III. p. 10. Singapore.

S. SUBRUGATA, Pfr. Proc. Zool. Soc. 1851; Mon. Hel. III. p. 10. Borneo.

S. OBESA, von Mart. Ostas. Zool. II. p. 387, pl. 22, fig. 21; Pfr. Mon. Hel. V. p. 463.

East Java.

S. GRACILIS, Lea, Proc. Amer. Phil. Soc. 1841, II. p. 31 ; Pfr. Mon. Hel. II. p. 518.

Java (?).

S. MINUTA, Mouss. Zolling. in Peterm. Geog. Mittheil. 1864, H. VIII. p. 303 (Nomen) ; Mart. Ostas. Zool. II. p. 388 ; Pfr. Mon. Hel. V. p. 464.

Bali.

Family CYCLOPHORIDÆ.

The Cyclophoridæ have heliciform shells with a circular opening, and covered with a thick periostraca ; operculum calcareous or horny, spiral with numerous whorls.

Animal with long, slender, pointed tentacles, foot broadly expanded, not grooved.

21. CYCLOTUS, Guilding.

Conchological Papers, by L. Guilding. See Swainson, "Shells and Shell-fish," pp. 182 and 336.

Shell nearly discoid ; pillar none ; spire scarcely raised ; lip thickened ; widely umbilicate ; operculum shelly ; whorls numerous with raised margins. 44 species, mostly tropical.

CYCLOTUS HUNGERFORDIANUS, O. von Möll. Jour. As. Soc. Beng. LV. 1886, p. 306.

Bukit Pondok, Perak.

C. (?) DISCOIDEUS, Sowerby = *Cyclostoma discoideum*, Sow. Thes. N. 60, p. 111, pl. 25, figs. 87-88 ; Chemn. 2nd edit. Cycl. No. 153, p. 144, pl. 20, figs. 1-3 ; Mouss. Jav. Moll. p. 50, pl. 20, fig. 10 = *Aperostoma discoideum*, Pfr. in Zeitschr. f. Malak. 1847, p. 104 = *Cyclotus discoideus*, Gray, Catal. Cycloph. p. 8, No. 11 ; Pfr. Consp. No. 36 ; Mon. Pneumon. Viv. p. 36.

Malang, Java.

C. OPALINUS, Mouss. = *Cyclostoma opalinum*, Mouss. Jav. Moll. p. 51, pl. 5, fig. 12 = *Cyclotus opalinus*, Pfr. Consp. No. 37 ; Mon. Pneumon. p. 36.

Malang, Java.

C. CORNICULUM, MOUSS.= *Cyclostoma corniculum*, MOUSS. Jav. Moll. p. 51, pl. 5, fig. 11 = *Cyclotus corniculum*, Pfr. Consp. No. 40; Mon. Pneumon. p. 38.

Pardana, Java.

C. TAYLORIANUS, Pfr.= *Cyclostoma taylorianum*, Pfr. Zeitschr. f. Malak. 1851, p. 7; Chemn. 2nd edit. Cycl. No. 285, pl. 38, figs. 27-29, pl. 43, figs. 1-3 = *Cyclotus taylorianum*, Pfr. Mon. Pneumon. p. 40.

Sarawak, Borneo.

C. ROSTELLATUS, Pfr.= *Cyclostoma rostellatum*, Pfr. Zeitschr. f. Malak. 1851, p. 8; Chemn. 2nd edit. Cycl. No. 286, pl. 38, figs. 30-34 = *Cyclotus rostellatus*, Pfr. Mon. Pneumon. p. 40.

Singapore.

C. LINDSTEDTI, Pfr.= *Cyclostoma lindstedti* (*Cyclotus*), Pfr. Proc. Zool. Soc. 1856, p. 391 = *Cyclotus lindstedti*, Pfr. Mon. Pneumon. Suppl. I. p. 24.

Mount Ophir, Malacca.

C. PTYCHORAPHE, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 15.

Borneo.

C. (?) PARVULUS, von Mart. Malak. Bl. X. 1863, p. 85; Pfr. Mon. Pneumon. Suppl. II. p. 17.

Ternate; Tidore.

C. RETICULATUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 17.

Timor; Flores; Adenare and Solor.

C. SUCCINCTUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 17.

Timor.

C. LIRATULUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 27.

Moluccas.

C. BICARINATUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 27.

Ceram.

C. CARINULATUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 28.

Buru.

C. PRUINOSUS, von Mart. Malak. Bl. X. 1863, p. 83; Pfr. Mon. Pneumon. Suppl. II. p. 34.

Animal black. Common in the islands of Molucca, Ternate, Tidore, and Moti.

C. BATCHIANENSIS, Pfr. Proc. Zool. Soc. 1861, p. 28, pl. 3, fig. 1; Mon. Pneumon. Suppl. II. p. 35; Reeve, Conch. Icon. sp. 46, pl. 8.

Batchian.

C. LATISTRIGUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 35.

Borneo.

C. FASCIATUS, von Mart., Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 35.

Celebes.

C. FULMINULATUS, von Mart. Monatsber. Berl. Ak. 16 Jan. 1865, p. 21; Pfr. Mon. Pneumon. Suppl. III. p. 27 = *Cyclotus politus*, von Mart. Malak. Bl. XI. 1864, p. 141 (not Sowerby).

Celebes.

C. LONGIPILUS, von Mart. Monatsber. Berl. Ak. 16 Jan. 1865, p. 51; Pfr. Mon. Pneumon. Suppl. III. p. 28.

Maros, Celebes.

C. AMBOINENSIS (CYCLOSTOMA), Pfr. Mon. Pneumon. Suppl. III. p. 32; von Mart. Ostas. Zool. II. p. 121, pl. 2, figs. 4-5 = *Cyclostoma amboinense*, Pfr. 1852, = (?) *Cyclophorus amboinensis*, Pfr. Mon. Pneumon. p. 82, No. 49 = *Cyclophorus marmoratus*, Fér. Pfr. Mon. Pneumon. p. 68 (Martens).

Amboyna; Ceram; Buru.

22. OPISTHOPORUS, Benson.

Zeitschr. f. Malak. 1851, p. 8; Pfr. Mon. Pneumon. Viv. Suppl. III. p. 41; Zeitschr. f. Malak. 1851, p. 8; Pfr. Mon. Pneumon. Viv. Suppl. I. p. 25, II. p. 36.

Shell depressed, orbicular, largely umbilicate; aperture double, with the external parts spread out; suture behind the opening and furnished with a little open tube; operculum calcareous, circular, rather thick, concave at both sides, multispiral, double; the internal side covered with a horny periostraca, the external calcareous and rough; columella margin concave.

OPISTHOPORUS SOLUTUS, Stol. Jour. As. Soc. Beng. XLI. 1872, p. 266, pl. 10, figs. 8-10; Pfr. Mon. Pneumon. Suppl. III. 1876, p. 44; G. Nevill, Handl. Moll. Ind. Mus. 1878, p. 263; H. Crosse, Jour. Conch. XXVII. 1879, p. 337.

Bukit Pondok; Penang.

O. PENANGENSIS, Stol. l.c. 1872, p. 265, pl. 10, fig. 7; Pfr. Mon. Pneumon. Suppl. III. 1876, p. 43; G. Nevill, Handl. 1878, p. 263; H. Crosse, Jour. Conch. XXVII. 1879, p. 338.

Bukit Pondok; Penang.

O. JAVANUS, Pfr. Malak. Bl. VII. 1860, p. 215, pl. 3, figs. 8-10; Mon. Pneumon. Suppl. II. 1865, p. 37.

Nungnang, Java.

O. SUMATRANUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864; Pfr. Mon. Pneumon. Suppl. II. 1865, p. 37.

Sumatra.

(?) O. SPINIFERUS (CYCLOSTOMA), Morelet, = *Cyclostoma spiniferum*, Morelet, Jour. Conch. IX. 1861, p. 177 = *Opisthoporus spiniferus*, von Mart. Ostas. Zool. II. p. 113; Pfr. Mon. Pneumon. Suppl. III. p. 41.

Borneo.

O. PERTUSUS (CYCLOSTOMA), Morelet; Issel, Moll. Born. p. 75; Pfr. Mon. Pneumon. Suppl. III. p. 43 = *Cyclostoma pertusum*, Morelet, Jour. Conch. IX. 1861, p. 177.

Borneo.

23. PTEROCYCLOS, Benson.

Jour. Roy. As. Soc. I. 1832 and V. 1836; Zoological Journ. V. No. 20, p. 462.

Shell sub-discoid, largely umbilicate; aperture circular, the external layer overlapping the inner and dilated posteriorly with a distinct groove at the suture; operculum thick, composed of several spiral calcareous layers externally concave and horny within.

A small genus characteristic of the Indian region.

PTEROCYCLOS ALBERSI, Pfr. Zeitschr. f. Malak. 1847, p. 151; Chemn. 2nd edit. Cyclostoma, p. 197, pl. 28, figs. 1-5; Pfr. Mon. Pneumon. p. 45.

Perak; Kinta Valley (!), Selama (!).

PT. BREVIS (LITUUS), Martyn, = *Lituus brevis*, Martyn, Fig. of non-described shells, pl. 28c; Ed. Chenu (Bibl. Conch. II.) p. 21, pl. 8, fig. 2 = *Turbo petiverianus*, Wood, Suppl. pl. 6. fig. 2 = *Cyclostoma petiverianum*, Gray in Wood's Suppl. p. 36 = *Cyclostoma breve*, Pfr. in Chemn. 2nd edit. No. 180, p. 166, pl. 24, figs. 1-2 = *Myxostoma petiverianum*, Trosch. in Zeitschr. f. Malak. 1847, p. 44 = *Pterocyclos brevis*, Pfr. Zeitschr. f. Malak. 1851, p. 9; Consp. No. 46; Mon. Pneumon. p. 42.

India; Pulo Condor.

PT. PLANORBULUS, Lamarck, = *Cornu venatorium*, Chemn. Cab. IX. p. 104, pl. 127, figs. 1132-33 (?) = *Cyclostoma planorbula*, Lamarck, Encyclop. Méth. pl. 461, fig. 3 = *Cyclotus planorbulus*, Swains. Malacol. p. 336 = *Pterocyclos planorbulus*, Pfr. Consp. No. 47; Mon. Pneumon. p. 43.

Java (?); Borneo (?).

PT. TENUILABIATUS, Metc.; Pfr. Mon. Pneumon. p. 45 = *Cyclostoma tenuilabiatum*, Metc. Proc. Zool. Soc. 1851.

Borneo.

PT. BLANDI, Benson, Ann. and Magaz. VIII. 1851, Aug. pl. 5, fig. 1; Pfr. Mon. Pneumon. p. 49.

Pulo Susson.

PT. (?) SPIRACELLUM, A. Ad. and Reeve ; Pfr. Mon. Pneumon. p. 50 = *Cyclostoma spiracellum*, A. Ad. and Reeve, Voy. Samar. Moll. p. 56, pl. 14, fig. 1 ; Pfr. Mon. Pneumon. p. 50.

Borneo.

PT. LABUANENSIS, Pfr. Proc. Zool. Soc. 1863 ; Mon. Pneumon. Suppl. II. p. 41.

Labuan.

PT. LOWIANUS, Pfr. Proc. Zool. Soc. 1863 ; Mon. Pneumon. Suppl. II. p. 41.

Labuan.

PT. SUMATRANUS, von Mart. Monatsber. Berl. Ak. 25 Feb. 1864 ; Pfr. Mon. Pneumon. Suppl. II. p. 42.

Sumatra.

PT. BATCHIANENSIS, Reeve, Conch. Icon. sp. 6, pl. 2 ; Pfr. Mon. Pneumon. Suppl. II. p. 43.

Batchian.

PT. (?) EUDAEDALEUS, Crosse, Jour. Conch. XVII. 1869, p. 187 ; Pfr. Mon. Pneumon. Suppl. III. p. 51.

Borneo.

24. SPIRACULUM, Pearson, 1833, Jour. R. As. Soc. II. p. 391 ;
H. and A. Adams, Genera, p. 278.

Shell depressed, sub-discoid, with a thick periostraca, which is sometimes covered with small hairs ; aperture circular ; at the last whorl a sutural tube formed by the union of the outer layer of the shell over the channel on the penultimate whorl. By most authors this is regarded as a sub-genus of *Pterocyclos*.

SPIRACULUM (?) REGELSPERGERI, de Morgan, Le Naturaliste, VII. 1885, No. 9, p. 69 (*Cyclophorus*) ; O. von Möllendorff, Jour. As. Soc. Beng. LV. 1886, p. 308.

The last-named author says (l.c.) that the species is decidedly not a *Cyclophorus* but a *Pterocyclos*, which might be related to

Pt. albersi, Pfr., on account of the curious canaliculated suture. He adds: "De Morgan's mention of a tube, and of the fine membranaceous lamellæ of the operculum to render its fitting more hermetic, suggest a *Spiraculum* or *Rhiostoma* ;* but against the inclusion in the latter genus, it may be mentioned that the last whorl is not free."

Environs of Lahat and Pappan ; Kinta Valley ; Larut.

I collected three specimens, one on the road between Lahat and Goping, one at the mouth of the Diepang River, and one at Pappan, all in Perak.

S. KINTANUM, De Morgan, l.c. 1885, p. 69 = *Cyclophorus kintanum*, De Morgan, l.c. = *Spiraculum kintanum*, O. v. Möll. Jour. As. Soc. Beng. LV. p. 308.

Kinta Valley.

25. CYCLOPHORUS, Montfort, Conch. Syst. II. p. 290.

Shell globose, turbate or depressed and discoid, well umbilicated ; peristome entire, thick, double, and reflected ; periostraca thick ; operculum horny, orbicular, thin, multispiral.

A large genus, which formerly included nearly 200 species, but has now been sub-divided into several genera. Even after this Pfeiffer enumerated about 250 species. They are principally tropical and Indian, but some of the species are particularly characteristic of the Malayan region.

CYCLOPHORUS CONFLUENS, Pfr. Proc. Zool. Soc. 1860, p. 140 ; Reeve, Conch. Icon. sp. 69, pl. 15 ; Pfr. Mon. Pneumon. Suppl. II. p. 60.

Borneo.

*It should be noted that in Chenu's "Manuel de Conchyliologie" the genus is always written *Registoma*, possibly Van Hasselt's genus, the etymology of which is *ρήγη* and *στόμα*, but the derivation of *Rhiostoma* is from *ῥίον*, a promontory.

C. BANKANUS, von Mart. Oostas. Zool. II. p. 135; Pfr. Mon. Pneumon. Suppl. III. p. 101.

Banka Island.

C. MALAYANUS, Benson, = *Cyclostoma malayanum*, Bens. Ann. and Mag. Nat. Hist. 2nd series, X. p. 269 = *Cyclostoma volvulus* (*trochiformæ*, Lamarck), Souley. Voy. Bonite, Moll. pl. 30, figs. 18-21 = *Cyclotus* (?) *trochiformis*, M. E. Gray, Fig. Moll. Anim. pl. 303, fig. 11 (ex Souley.) = *Cyclophorus malayanus*, Pfr. Malak. Bl. 1854, p. 82; Mon. Pneumon. Suppl. I. p. 42.

Malayan Peninsula.

C. DEBEAUXI, Crosse, Jour. Conch. XII, 1864, p. 42; Pfr. Mon. Pneumon. Suppl. II. p. 62.

Singapore.

C. TUBA, Sow. = *Cyclostoma tuba*, Sow. Proc. Zool. Soc. 1843, p. 83; Chemn. 2nd edit. Cycl. No. 183, p. 169, pl. 23, figs. 10-11; Souley. Voy. Bonite, Moll. pl. 30, figs. 25-27 = *Cyclophorus tuba*, Pfr. Zeitschr. f. Malak. 1847, p. 107; Consp. No. 68; Mon. Pneumon. p. 57; Gray, Catal. Cycloph. p. 16, No. 3.

Mount Ophir, Malacca.

C. PFEIFFERI, Reeve, Conch. Icon. sp. 11, pl. 3; Pfr. Mon. Pneumon. Suppl. II. p. 64.

Pulo-Penang.

C. BORNEENSIS, Metc. = *Cyclostoma borneense*, Metc. Proc. Zool. Soc. 1851; Chemn. 2nd edit. Cycloph. No. 384, pl. 47, figs. 1-3 = *Cyclophorus borneensis*, Pfr. Mon. Pneumon. p. 63.

Borneo.

C. PERDIX, Brod. and Sow. = *Cyclostoma perdix*, Brod. and Sow. Zool. Jour. V. p. 50 = *Cyclostoma variegatum*, Val. Mus. Paris = *Cyclostoma aglae*, Sow. test. Mouss. Jav. Moll. p. 54 = *Cyclophorus perdix*, Pfr. Zeitschr. f. Malak. 1847, p. 107; Mon. Pneumon. p. 63.

Java.

C. ZOLLINGERI, Mouss. = *Cyclostoma zollingeri*, Mouss. Jav. Moll. p. 55, pl. 7, fig. 2 = *Cyclophorus zollingeri*, Pfr. Mon. Pneumon. p. 64.

Java.

C. CANTORI, Bens. = *Cyclostoma cantori*, Bens. Ann. and Mag. Nat. Hist. 2nd ser. VIII. p. 168; Chemn. new edit. p. 383, pl. 50, figs. 4-8 = *Cyclophorus cantori*, Pfr. Mon. Pneumon. p. 65; Mon. Pneumon. Suppl. I. p. 49; Gray, Cat. Phan. p. 44; H. and A. Adams, Genera II. p. 279.

Penang.

C. EXIMIUS, Mouss. = *Cyclostoma eximium*, Mouss. Jav. Moll. p. 53, pl. 7, fig. 1; Chemn. 2nd edit. No. 227, pl. 33, figs. 1-2 = *Cyclophorus eximius*, Pfr. Mon. Pneumon. p. 69.

Java.

C. BELULUS, von Mart. Monatsber. Berl. Ak. 16 Jan. 1865, p. 52; Issel, Moll. Born. p. 69; Pfr. Mon. Pneumon. Suppl. III. p. 106.

West Borneo.

C. OCLUS CAPRI, Wood, = *Helix oculus capri*, Wood, Ind. pl. 32, fig. 7 = *Cyclostoma oculus capri*, Gray, Mus. Brit.; Reeve, Conch. Syst. pl. 184, fig. 11; Sow. Thes. No. 73, p. 115, pl. 25, fig. 96; Chemn. 2nd edit. No. 18, p. 26, pl. 3, figs. 5-6; Mouss. Jav. Moll. p. 52, pl. 6, fig. 2 = *Cyclostoma rafflesii*, Brod. and Sow. Zool. Journ. V. p. 50 = *Cyclostoma indicum*, Phil. Abbild. I. 5, p. 103, pl. 1, fig. 2 = *Cyclophorus oculus capri*, Gray, Catal. Cycloph. p. 20, No. 23; Pfr. Mon. Pneumon. p. 87.

Java; Sumatra.

C. SEMISULCATUS, Sow. = *Cyclostoma semisulcatum*, Sow. Proc. Zool. Soc. 1843, p. 62; Chemn. 2nd edit. No. 81, p. 86, pl. 11, figs. 1-2 = *Cyclophorus semisulcatus*, Gray, Catal. Cycloph. p. 20, No. 24; Pfr. Mon. Pneumon. p. 88.

Malacca.

C. CHARPENTIERI, Mouss. = *Cyclostoma charpentieri*, Mouss. Jav. Moll. p. 56, pl. 6, fig. 3; Mörch, Catal. Conch. p. 8 (*sharpentieri*), pl. 1, fig. 6 = *Cyclostoma involvulus*, var.? Chemn. 2nd edit. p. 30, pl. 8, figs. 10-12 = *Cyclophorus sharpentieri*, Pfr. Mon. Pneumon. p. 89.

Java.

C. TAENIATUS, Pfr. = *Cyclostoma taeniatum* (*Cyclophorus*), Pfr. Proc. Zool. Soc. 1854, p. 301 = *Cyclophorus taeniatum*, Pfr. Mon. Pneumon. Suppl. I. p. 59.

Sumatra.

C. TENEBRICOSUS, Adams and Reeve, = *Cyclostoma tenebricosum*, Ad. and Reeve, Voy. Samarang, Moll. p. 57, pl. 14, fig. 6 = *Leptopoma tenebricosum*, Pfr. Consp. No. 171; Mon. Pneumon. p. 117 = *Cyclophorus tenebricosus*, Ad. Genera, p. 280; Pfr. Mon. Pneumon. Suppl. I. p. 76, II. p. 69.

Borneo.

C. BELLUS, von Mart. Malak. Bl. XX. 1872, p. 159; Pfr. Novit. Conch. IV. p. 126, No. 830, pl. 128, fig. 10; Mon. Pneumon. Suppl. III. p. 113.

Celebes.

C. METCALFEI, Issel, Moll. Born. 1874, p. 69, pl. 6, figs. 4-6; Pfr. Mon. Pneumon. Suppl. III. p. 113.

Sarawak, Borneo.

C. TROCHOIDES (LAGOCHEILUS), Stol. = *Lagocheilus trochoides* Stol. Journ. As. Soc. XLI. 1872, p. 273, pl. 10, fig. 15; = *Cyclophorus trochoides*, Pfr. Mon. Pneumon. Suppl. III. p. 123.

Penang.

C. STRIOLATUS (LAGOCHEILUS) Stol. = *Lagocheilus striolatus*, Stol. Jour. As. Soc. Beng. XLI. 1872, p. 271, pl. 10, fig. 16 = *Cyclophorus striolatus*, Pfr. Mon. Pneumon. Suppl. III. p. 123.

Penang.

C. REGELSPERGERI, De Morgan, Le Nat. VII. 1885, No. 9, p. 69 = *Spiraculum regelspergeri*, von Möllendorff, Jour. As. Soc. Beng. LV. 1886, p. 308.

Environs of Lahat and Pappan, the Valley of the Kinta River, Perak.

C. KINTANUM, De Morgan, l.c. 1885, p. 69 = *Spiraculum kintanum*, von Möllendorff, l.c.

Kinta Valley, Perak.

C. EXPANSUS, Pfr. (4) var. von Möllendorff, l.c. p. 309; G. Nevill, Handl. 1878, p. 269.

Bukit Pondok.

C. LOWI, de Morgan, l.c. 1885, p. 69; von Möllendorff, l.c. p. 309.

Kinta Valley; Patani.

C. (LAGOCHILUS ?) TOWNSENDI, Crosse, Jour. Conch. XXVII. 1879, pp. 200, 339, pl. 8, f. 3 = *Lagocheilus*, n.sp. G. Nevill, Handl. 1878, p. 282 = *Cyclophorus baylei*, De Morgan, l.c. 1885, p. 69 = *Lagochilus townsendi*, von Möllendorff, l.c. p. 309.

26. LEPTOPOMA, Pfeiffer, Zeitschr. f. Malak. 1847, p. 47.

A *Cyclophorus* with a thin operculum.

LEPTOPOMA ASPIRANS, Benson, von Möllendorff, l.c. p. 309.

Bukit Pondok.

27. ALYCÆUS, Gray, Proc. Zool. Soc. 1850.

Shell conical or depressed, very deep sutures, last whorl much swollen, constricted and twisted near the opening, which is round; peristome double, the outer plate reflected; operculum thin, circular, calcareous, with numerous whorls.

ALYCÆUS GIBBOSULUS, Stol. Jour. As. Soc. Beng. XLI. 1872, p. 268, pl. 10, fig. 14; Pfr. Mon. Pneumon. Suppl. III. p. 58.

Penang.

A. PERAKENSIS, Crosse, Jour. Conch. XXVII. 1879, pp. 206, 339, pl. 12. fig. 7; von Möllendorff, Jour. As. Soc. Beng. LV. 1886.

Bukit Pondok.

Crosse compares this with *A. jagori*, Mart., from Java. It is, however, well distinguished from this latter by its large size, bright yellow colour, the smaller number of its whorls, and its spiral sculpture (von Möllendorff).

A. DIPLOCHILUS, von Möllendorff, l.c. p. 310.

Bukit Pondok.

A. OLIGOPLEURIS, von Möll. l.c. p. 310.

Bukit Pondok.

A. MICRODISCUS, von Möll. l.c. p. 311.

The peculiar distortion of the last whorl, which first descends after the constriction, and is again deflected towards the aperture, separates this minute species from all forms known (von Möllendorff).

Bukit Pondok.

A. PARVULUS, von Möll. l.c.

Another minute form, still smaller than the last to which it appears somewhat related. It differs, however, in the constriction being nearer the aperture, almost regular last whorl, the broad outer and very prominent inner peristome (von Möll.).

Bukit Pondok.

A. MICROCONUS, von Möll. l.c.

By the conical shape, the regular last whorl and the reticulate sculpture this small species is very well distinguished from all Indian *Alycae*.

Bukit Pondok.

A. JOUSSEAUMEI, De Morgan, Le Nat. VII. 1885, No. 9, p. 70 ; von Möll. l.c. p. 312.

Limestone hills of the valley of the Kinta, summit of Mt. Lano.

A. CHAPERI, De Morgan, l.c. p. 70, probably = *A. gibbosulus*, Stol. *Ita* von Möll.

Penang ; Bukit Pondok.

Family DIPLOMMATINACEÆ, Benson.

(Including the genera *Paxillus*, *Palaina*, *Arinia* and *Diplommatina*).

28. DIPLOMMATINA, Benson, Ann. and Mag. Nat. Hist. 1849,
Sept. p. 193.

Shell sub-oval, with the slightest trace of an umbilical slit ; peristome interrupted expanded ; operculum thin, between testaceous and horny, with a projecting thin claw.

Shells belonging to the Indian region amounting to about 30 species, but some of uncertain position, which extend to New Zealand, Lord Howe's Island and Australia. The family may be said to be represented partly in southern Asia and its islands.

Animal with long and filiform tentacles, with sessile eyes on the posterior base; foot short. The name of the genus refers to two lobes on each tentacle at the base behind, on each of which there is an eye. The species abound in masses of decayed vegetable matter, or under stones in damp situations, and beneath trees on the shady sides of mountains. I found a good many on a dead tree which had been felled in the clearing of a coffee plantation. At daybreak in the morning I generally found one or two walking about. This was probably *D. mirabilis*. The genus *Paxillus* is founded on a smooth reversed species from Borneo.

DIPLOMMATINA CONCINNA, H. Adams, Proc. Zool. Soc. 1872, p. 13, pl. 3, fig. 22; Issel, Moll. Born. p. 77; Pfr. Mon. Pneumon. Suppl. III. p. 74.

Borneo.

D. CANALICULATA, von Möll. Jour. As. Soc. Beng. LV. 1886, p. 312.

Bukit Pondok.

D. NEVILLI, Crosse, Jour. Conch. XXVII. 1879, pp. 203, 339, pl. 8, fig. 2 (*Palaina*); von Möll. l.c. p. 313.

Bukit Pondok.

D. CROSSEANA, Godwin-Aust. and G. Nev. Proc. Zool. Soc. 1879, p. 738, pl. 60, figs. 3, 3a.

Bukit Pondok.

D. MIRABILIS, Godwin-Aust. and G. Nev. l.c. p. 739, pl. 60, figs. 4a, 4b; von Möll. l.c. p. 313.

Bukit Pondok.

D. SUPERBA, Godwin-Aust. and G. Nev. l.c. p. 739, pl. 60, figs. 5, 5a (*Palaina*).

Bukit Pondok.

29. OPISTHOSTOMA, Crosse and Nevill, Jour. de Conch. XXVII.
1879, pp. 197, 205, 339.

Shell with the upper whorls obliquely deflected; last whorl constricted, thin, inflated, finally sinistrally ascending close to the upper whorls; aperture reversed, almost vertical, rounded; peristome continuous and duplicated; operculum normal. Habitat the same as the last genus. Scarcely a dozen species.

OPISTHOSTOMA PAULUCCIÆ, Crosse and Nevill, Jour. de Conch. XXVII, 1879, pp. 197, 205, 339, pl. 8, fig. 1; Godwin-Aust. and G. Nev. Proc. Zool. Soc. 1879, p. 738, pl. 9, figs. 2, 2a, 2b; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 313.

Bukit Pondok.

O. PERAKENSE, Godwin-Aust. and G. Nev. l.c. p. 738, pl. 60, figs. 1, 1a, 1b; von Möll. l.c. p. 313.

Bukit Pondok.

O. CRESPIGNYI (PLECTOSTOMA), H. Adams (Coll. 1.) = *Plectostoma De Crespignii*, H. Adams, Ann. and Mag. Nat. Hist. 3rd ser. XV. p. 177 (Pfr. Mon. Hel. V. p. 437) = *Opisthostoma decrepignyi*, Paetel, Catal. p. 119 = *O. crespignyi*, Pfr, Mon. Pneumon. Suppl. III. p. 68.

Labuan, Borneo.

Family PUPININÆ, Pfr.

30. PUPINA, Vignard, Ann. Sc. Nat. Vol. XVIII. 1829, p. 440.

Shell sub-cylindric like *Pupa*, thin, transparent, smooth, very shining; mouth not quite round; the columella margin with a deep notch anteriorly and a tooth posteriorly; peristome simple; operculum in all the family orbicular, thin, horny, with numerous gradually increasing whorls from a central nucleus.

PUPINA ARTATA, Bens.; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 314.

Perak.

P. ARULA, Bens. ; von Möll. l.c.

Bukit Pondok.

P. AUREOLA, Stol. Jour. As. Soc. Beng. XLI. 1872, p. 267, pl. 10, figs. 11-12 ; Pfr. Mon. Pneumon. Suppl. III. p. 148.

Penang.

P. PFEIFFERI, H. Adams, Proc. Zool. Soc. 1865, p. 416, pl. 21, figs. 11-12=*P. pfeifferiana*, H. Adams, Proc. Zool. Soc. 1869, p. 275=*P. pfeifferi*, Pfr. Mon. Pneumon. Suppl. III. p. 149.

Island of Batchian.

P. JUNGHUHNI (RHEGISTOMA), Herklots=*Rhegistoma janghuhni*, Herk. Mus. Lugdun=*Pupina janghuhni*, Pfr. Mon. Pneumon. Suppl. III. p. 151.

Java.

P. AMBOINENSIS (CALLIA), von Mart.=*Callia amboinensis*, von Mart. Monatsber. Berl. Ak. 16 Jan. 1865, p. 53=*Pupina amboinensis*, Pfr. Mon. Pneumon. Suppl. III. p. 154.

Amboyna.

P. VESCOI, Morelet, Rev. et Mag. Zool. 1862, p. 479 ; Crosse and Fisch. Jour. Conch. XI. p. 372 ; Pfr. Mon. Pneumon. Suppl. II. p. 94.

Pulo Condor.

P. SUPERBA, Pfr. Proc. Zool. Soc. 1855, p. 118 ; Mon. Pneumon. Suppl. I. p. 94.

Sumatra.

31. MEGALOMASTOMA, Guilding ; Swainson, Malacology,
pp. 186 and 336.

Shell cylindrical resembling *Pupa*, but has a horny operculum ; spire not thickened ; teeth or fold on the pillar none.

MEGALOMASTOMA ANOSTOMA, Bens. Pfr. Malak. Bl. 1854, p. 89 =*M. sectilabrum*, Pfr. Mon. Pneumon. p. 133 ; Chemn. new edit.

p. 377, pl. 47, figs. 11-12; Gray, Cat. Phan. p. 93 = *M. anostoma*, Pfr. Mon. Pneumon. Suppl. I. p. 85.

Labuan, Borneo.

M. LEFERI, Morelet = *Cyclostoma leferi*, Morelet, Jour. Conch. IX. 1861, p. 176 = *Megalomastoma leferi*, von Mart. Ostas. Zool. II. p. 154; Pfr. Mon. Pneumon. Suppl. III. p. 138.

Borneo.

M. DORIAE, Issel, Moll. Born. 1874, pl. 67, pl. 6, figs. 18-19; Pfr. Mon. Pneumon. Suppl. III. p. 138.

Sarawak, Borneo.

M. (COPTOCHILUS) SECTILABRUM, Gould; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 314.

Perak; Larut; Penang.

32. HYBOCYSTIS, Benson, 1859, Annals and Mag. Nat. Hist. 3rd ser. IV. p. 90.

This remarkable and exceedingly interesting genus, which forms one of the peculiar features of the terrestrial molluscan fauna of the Malay Peninsula, deserves the fullest details in this list. Fortunately its history as a species has been well marked out by M. P. Fischer in the "Journal de Conchyliologie" (XXV. 3rd series, 1885, p. 180), an epitome of whose researches will now be given.

The genus was proposed by Benson in 1859 for a Burmese shell which had been hitherto described as a species of *Megalomastoma*, and in its young stages as a species of *Otopoma*. Some years before Dr. Gould, the American naturalist, had described the same shell, for which he had proposed the generic name of *Pollicaria*; but as the genus was insufficiently defined, and included species of different genera, Benson's genus has been preferred as complying with every condition of necessary exactness.

The shell is ovoid and pupiform, but deviating from its axis in the last whorls in the manner of certain species of *Streptaxis*. The ante-penultimate whorl is much developed and flattened in

front above the mouth, which is sub-circular and angular anteriorly in young specimens, which also present a little canaliculate prolongation, which is obliterated little by little as the animal is developed, leaving when completely closed only the appearance of a triangular area traversed longitudinally by a linear scar, and leaving in that state a rounded double peristome. Internal lip relatively less thick, deeper coloured, and more shining; external reflected, but not always perfectly united with the inner. Operculum testaceous, somewhat thick, with a central nucleus, and composed of two plates; external face multispiral, slightly concave in the middle; internal face few whorls, also slightly concave in the middle; margin with a feeble keel.

The foot is not divided as in the Cyclostomidæ, where there are two longitudinal parts independent of each other for crawling. The animal is long, with a very thin mantle, whose anterior border is simple and not papillose; head and muzzle short, thick, the latter grooved transversely on its upper face; buccal orifice, when open, oval, and showing the extremity of the radula, but when the mouth is closed it is a simple slit; tentacles short, thick, transversely striate, slightly constricted at the base, of a uniform reddish color; eyes at the external base well pigmented and placed on short, obtuse, and slightly convex peduncles; foot thick, fleshy, wide, short, oval, obtuse, truncate in front, round behind. There is a large pedal sinus in front, but no trace of that longitudinal division which is common in the family of Cyclostomidæ, but the foot is rather that of the family of Cyclophoridæ. The upper part of the foot carries the operculum, the adherence of which is circular, with an umbilicated non-central projection, which corresponds to the nucleus of the internal face, so that half the organ is free, like the genus *Cyclophorus*. The sexes are distinct, the females being a little larger in size. The mouth has two mandibular plates, brown, chitinous, and solid, visible to the naked eye, but when magnified displaying a faceted structure roughly hexagonal or rounded. This may possibly be some arrangement connected with the eyes of the animal, or a faceted eye-structure like that which exists

in the head of insects. All the Cyclophoridæ have similar organs. The radula has the following formula $(2, 1, 1, 2) \times 66$. It is long, a little curved at the end, but relatively shorter than amongst the most of the Cyclophoridæ. The teeth are in oblique rows from the median line to the outer margin. The central teeth are a little oblong, slightly constricted in the centre like an hour-glass, and widely and roundly notched at the base. There is a central wide, short, obtuse cusp, with the rudiment of a lateral one. The first lateral teeth are larger, oblique, elongate, with a narrow base, curving over outwardly on the summit in a direction opposite to the other teeth. The free edge is bicuspid, the outer short, wide, obtuse, the inner small and short. The two marginal teeth are bicuspid, the internal cusp more feeble than the external, which is triangular.

M. Fischer, in the "Manuel de Conchyliologie," p. 71, gives his reasons for classing *Hybocystis* between *Pupina* and *Cataulus*, but he admits that it differs from the majority of Cyclophoridæ by its bicuspid marginal and lateral teeth, and the obtuse cusps of the median tooth. These characters united to those of the shell and of the operculum determine the genus. In the position of *Hybocystis* Dr. Pfeiffer takes a different view, and places it in the great family of Cyclostomaceæ, in the sub-family Cyclotea. Stoliczka (Jour. As. Soc. Beng. 1871, p. 150) agrees with M. Fischer.

The following is the explanation of the figures given in the plate :—

Fig. 1. Animal of *Hybocystis elephas*, De Morgan, from a female specimen preserved in alcohol. The head and foot are shown in front—M, edge of mantle ; T, tentacles ; E, eye ; F, sole of foot.

Fig. 2. Male specimen of the same ; head and foot shown in front—M, mantle ; T, tentacles ; E, eye ; F, foot ; V, verge.

Fig. 3. Same male specimen shown in profile from the right side—T, tentacle ; B, buccal orifice ; F, foot ; V, verge.

Fig. 4. Radula of do.—A, central tooth ; B, lateral tooth ; C, first marginal tooth ; D, second marginal tooth.

Fig. 5A. Portion of one of the mandibular plates (very much enlarged).

Fig. 5B. Details of do., on a much larger scale.

Figures 1, 2, 3 are magnified two diameters.

HYBOCYSTIS ELEPHAS, De Morgan, Le Nat. VII. 1885, No. 9, p. 70 ; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 314.

Perak.

H. JOUSSEAUMEI, De Morgan, l.c. p. 70 ; von Möll. l.c. p. 315.

Valley of the Plus river.

Family HYDROCENIDÆ.

33. GEORISSA, Blanford, 1864.

Ann. and Mag. Nat. Hist. 3rd series, XIII. 1864, p. 463 ; ibid. 4th series, III. 1869, p. 173.

Type *Hydrocena pyxis*, Benson.

Shell resembling that of *Hydrocena*, imperforated, small, conical, amber or reddish-coloured, spirally sulcated or striated.

Animal furnished with hemispherical lobes in the place of tentacles ; eyes normal ; foot short, rotund. Operculum semi-oval, no spiral structure as in *Helicina* ; excentrically striated, testaceous, transparent.

GEORISSA MONTEROSATIANA, Godwin-Austen and G. Nevill, Proc. Zool. Soc. 1879, p. 739, pl. 59, fig. 6 ; von Möll. Jour. As. Soc. Beng. LV. 1886, p. 316.

Bukit Pondok.

G. SEMISCULPTA, Godwin-Austen and G. Nevill, l.c. p. 740, pl. 59, fig. 3, 3a ; von Möll. l.c. p. 316.

Bukit Pondok.

FRESHWATER MOLLUSCA.

Sub-order OPISOPHTHALMA.

Family TRUNCATELLIDÆ.

These animals have a distinct bi-lobed muzzle with flat sub-triangular tentacles, and a sub-spiral horny operculum.

1. TRUNCATELLA, Risso, Hist. Nat. de l'Europe, IV. p. 121.

Shell solid, cylindrical in its young state, truncated in the adult; whorls rounded; mouth oval; peristome complete, reflected; operculum horny, thin, with a lateral nucleus.

Animal furnished with a retractile bifid muzzle proboscis-shaped. There are about 15 species, tropical or sub-tropical, found in salt and fresh water.

TRUNCATELLA VALIDA, Pfr. Mon. Auric. p. 184; Zeitschr. f. Malak. 1846, p. 182, No. 1; Küst. Mon. p. 11, No. 7, pl. 2, figs. 7, 8, 19, 21, 23.

Philippines, Baclayon, Capul, New Caledonia, and Malay Peninsula.

TR. MARGINATA, Küst. Mon. p. 12, No. 8, pl. 2, figs. 24-26; Pfr. Mon. Auric. p. 186.

Labuan, Borneo; Malacca.

TR. AURANTIA, Gould, Exp. Sh. 1846, p. 39, Ed. 1851, pl. 8, fig. 125; Pfr. Mon. Pneumon. Suppl. I. p. 6.

Mangsi Island, Borneo.

TR. SCALAROIDES, von Mart. Monatsber. Berl. Ak. 25 Febr. 1864; Pfr. Mon. Pneumon. Suppl. II. p. 7.

Amboyna.

Family MELANACEÆ.

2. MELANIA, Lamarck, Hist. Nat. Animaux s. Vertèbres.

Shell more or less turreted, generally wrinkled or nodulous, mostly covered with a black or olive epidermis; spire elongated, generally more or less eroded towards the apex; columella smooth, arched; aperture ovate, entire, sometimes attenuately channelled at the base; lip simple.

Animal: disk short and slight; head proboscis-shaped, subconical, truncated, with the tentacles distant and subulate, having the eyes on the outer side and sometimes at the base, sometimes more advanced; mantle fringed; operculum horny.

Univalve shells chiefly inhabiting the tropical rivers of India, the Indian Archipelago and tropical North America. About 160 species have been described, but these are capable of great reduction.

MELANIA FOEDA, Lea, Proc. Zool. Soc. Lond. 1850; Brot, Mater. III. p. 33, pl. 3, fig. 4; Brot, Melanidæ, Conchylien Cabinet I. p. 51.

Java.

M. ANGULIFERA, Brot, Mater. III. p. 32, pl. 2, fig. 9; Melanidæ, Conch. Cab. I. p. 51.

Java.

M. PARVA, Lea, = *Pachychilus parvum*, Lea, Proc. Ac. Nat. Sc. Philad. 1856 = *Melania crassilabrum*, Reeve, Conch. Icon. f. 221 = *Paludomus cyanostomus*, Morelet, Jour. Conch. 1864, p. 288 = *Melania parva*, Brot, Melan. (Conch. Cab. I.) p. 55.

Sarawak, Borneo; Siam; New Caledonia, (?)

M. SULCOSPIRA, Mouss. Jav. Moll, pl. 9, fig. 3; Brot, Melan. p. 56 = *Sulcospira typica*, Trösch. Gebiss der Schnecken.

Java.

M. PERFECTA, MOUSS. JAV. Moll. pl. 22, fig. 5; Reeve, Conch. Icon. fig. 84 = *Melanoides perfecta*, H. and A. Ad. Gen. = *Melania perfecta*, Brot, Melan. p. 79.

Amboyna; Maros, Celebes.

M. WALLACEI, Reeve, Conch. Icon. fig. 66; Brot, Melan. p. 80 = *M. constricta*, MOUSS. MSS.

Celebes; Macassar.

M. VARIABILIS, BENSON, Jour. As. Soc. Calcutta, 1835; Hanley and Theobald, Conch. Ind. pl. 109, figs. 2-6 = *Melanatria variabilis*, Gray, Guide Syst. distrib. = *Melania herculea*, Reeve, Conch. Icon. fig. 4 a. b. = *Melanoides herculea*, H. and A. Ad. Gen. = *Melania variabilis*, Brot, Melan. p. 85.

Java; Burmah.

M. SUMATRENSIS, Brot, Melan. p. 87.

Sumatra, Java.

M. EPISCOPALIS, Lea, Proc. Zool. Soc. 1850; (?) Reeve, Conch. Icon. fig. 12; Brot, Melan. p. 97.

Malacca.

M. INFRACOSTATA, MOUSS. JAV. Moll. p. 65, pl. 10, fig. 3 (not Reeve); Brot, Melan. p. 98 = *M. episcopalis*, Lea, var. Brot, Catal. of Rec. Mel. p. 280, No. 80.

Java.

M. BROOKEI, Reeve, Conch. Icon. fig. 207 = *M. episcopalis*, Lea, Catal. Rec. Melan. = *M. pontificalis*, v. d. Busch, Zeitschrift f. Malak. 1853, p. 178 = *M. brookei*, Brot, Melan. p. 99.

Borneo.

M. AGRESTIS, Reeve, Conch. Icon. f. 140 = *M. coarctata*, Lam. var. Brot, Mater. I. p. 42 = *M. agrestis*, Brot, Melan. p. 101.

Borneo.

M. CIRCUMSTRIATA, Metc. Proc. Zool. Soc. 1851, p. 73; Reeve, Conch. Icon. fig. 205 = *Melanoides circumstriata*, H. and A. Ad. Gen. = *Melania circumstriata*, Brot, Melan. p. 101.

Borneo.

M. CLAVAEFORMIS, Brot, Melan. p. 103.

Borneo.

M. TORQUATA, v. d. Busch, Phil. Abbildg. pl. 1, fig. 18; Mouss. Jav. Moll. pl. 12, fig. 2; Brot, Melan. p. 110 = *M. terebra*, Reeve, Conch. Icon. fig. 59; Hanley and Theobald, Conch. Ind. pl. 71, figs. 8-9.

Java; Bengal.

M. SOOLOOENSIS, Reeve, Conch. Icon. fig. 31; Brot, Melan. p. 105.

Sulu.

M. ZOLLINGERI, Brot, Mater. II. pl. 2, fig. 4, p. 42; Melan. p. 111.

Java.

M. CRENULATA, (Desh.) var. *TIROURI* (Fér.); Desh. in Lam. An. s. V. No. 18; Chenu, Man. Conch. fig. 1986; H. and A. Adams, Gen.; Brot, Melan. p. 114.

Celebes.

M. CRENULATA (Desh.) var. *PORCATA*, Jonas, Zeitschr. f. Malak. 1844, p. 50; Phil. Abbildg. pl. 4, fig. 19; Mousson, Moll. Jav. pl. 11, fig. 4; Brot, Melan. p. 114.

Java.

M. SEMICANCELLATA, v. d. Busch, Phil. Abbildg. pl. 3, fig. 2; Reeve, Conch. Icon. fig. 37*b*; Brot, Melan. p. 118 = *M. laevis*, (Gray) Reeve, Conch. Icon. fig. 40 (not Gray) = *M. phlebotomum*, Reeve, Conch. Icon. fig. 105.

Java.

M. OBESULA, Brot, Melan. p. 121.

Java.

M. ACULEUS, Lea, Trans. Amer. Phil. Soc. Philad. V. pl. 19, fig. 72; Hanley, Conch. Misc. fig. 33 = *M. latronum*, Tarnier, MSS. = *M. subulata*, Sow. Man. Conch. 313 = *M. aculeus*, Brot, Melan. p. 122.

Java.

M. UNIFORMIS, Q. and G. Voy. Astrol. pl. 56, figs. 30-35; Desh. in Lam. An. s. V. No. 26; H. and A. Ad. Gen.; Brot, Melan. p. 124 = *M. fulgida*, Reeve, Conch. Icon. fig. 24 = *M. baculus*, Reeve, Conch. Icon. fig. 130.

Menado, Celebes; Philippines.

M. ANTHRACINA, v. d. Busch, Phil. Abbildg. pl. 3, fig. 3; Brot, Melan. p. 127.

Java (?).

M. TEREBRIFORMIS, Brot, Mater. I. p. 51; Melan. p. 144 = *M. terebra*, v. d. Busch, Phil. Abbildg. pl. 1, fig. 17; Reeve, Conch., Icon. fig. 46.

Java.

M. TURRIS, Brot, Mater. III. p. 38, pl. 2, fig. 11; Melan. p. 146.

Borneo.

M. ACICULA, Brot, Mater. III. p. 39, pl. 3, figs. 8-9; Melan. p. 154.

Labuan, Borneo.

M. SEMIORNATA, Brot, Rev. Zool. 1860, pl. 16, fig. 5; Melan. p. 159.

Java.

M. ARCTE-CAVA, Mouss. Jour. Conch. 1857, p. 161; Brot, Melan. p. 165 = *M. arcticava*, Mouss. in Reeve, Conch. Icon. fig. 71.

Bajumatil, Java.

M. MOLUCCENSIS, Q. and G. Voy. Astrol. pl. 56, figs. 22-25; Desh. in Lam. An. s. V. No. 24; Brot, Mater. III. p. 44, pl. 3, fig. 3 (not Reeve, Conch. Icon.); Melan. p. 166 = *Juga moluccensis*, (Q. and G.) H. and A. Ad. Gen.

Amboyna; Halmaheira.

M. MONILE, Mouss. Jour. Conch. 1857, p. 162; Brot, Melan. p. 173.

Java (?); Moluccas.

M. ORNATA, v. d. Busch, Phil. Abbildg. pl. 1, figs. 15-16; Brot. Melan. p. 173.

Java.

M. TRISTIS, Reeve, Conch. Icon. fig. 121; Brot, Melan. p. 175.

Java.

M. FULGURANS, Hinds, Ann. Mag. N. H. XIV. p. 9; Reeve, Conch. Icon. fig. 55; Chenu, Man. Conch. fig. 1993; H. and A. Ad. Gen.; Brot, Melan. p. 183.

Moluccas; New Ireland; Formosa.

M. LABUANENSIS, Brot, Mater. III. p. 41; Melan. p. 184.

Labuan, Borneo.

M. PAPUENSIS, Q. and G. Voy. Astrol. pl. 56, figs. 45-47; Desh. in Lam. An. s. V. No. 27; Brot, Mater. III. p. 45; Melan. p. 186.

Moluccas (?).

M. DISTINGUENDA, Brot, Melan. p. 190 = *M. pyramus* (Bens.) Reeve, Conch. Icon. fig. 51 (not Bens. nor. v. d. Busch).

Borneo.

M. AMABILIS, v. d. Busch, in Reeve, Conch. Icon. fig. 223 = *M. pulchra*, v. d. Busch, Malak. Blät. 1858, p. 35 = *M. amabilis*, Brot, Melan. p. 192.

Celebes.

M. SUBSUTURALIS, Metc. Proc. Zool. Soc. 1851, p. 73; Brot, Melan. p. 197 = *M. metcalfei*, Reeve, Conch. Icon. fig. 212.

Borneo.

M. DISJUNCTA, Brot, Melan. p. 198.

Borneo.

M. INHONESTA, v. d. Busch, Phil. Abbildg. pl. 4, fig. 5; (?) Reeve, Conch. Icon. fig. 226; (?) Mousson, Jav. Moll. p. 71; Brot, Melan. p. 206 = *M. ovalana*, Mouss. Jour. Conch. 1870, p. 208.

Java; Ovalau.

M. CREPIDINATA, Reeve, Conch. Icon. fig. 120; Brot, Melan. p. 238.

Java; Borneo.

M. JAVANICA, v. d. Busch, MSS. (Philippi states that this is a MS. name of van den Busch) ; Brot, Catal. Rec. Mel. No. 200 ; Melan. p. 246 = *M. coarctata* (Lam.) Phil. Abbildg. pl. 4, fig. 20 ; Reeve, Conch. Icon. fig. 22.

Java.

M. TUBERCULATA, Müll. Verm. Ter. No. 378 ; Chemn. IX. p. 189 ; Phil. Abbildg. pl. 1, fig. 19 ; Reeve, Conch. Icon. fig. 87 ; = *Melanoides tuberculata* (Müll.), H. and A. Ad. Gen. = *Melania fasciolata*, Lam. An. s. V. No. 16 = *M. suturalis*, Phil. Abbildg. p. 4, fig. 17 = *M. tuberculata*, Brot, Melan. p. 247.

Siam ; Java ; Malta ; Madagascar ; India ; Ceylon, &c.

M. CYLINDRACEA, Mouss. Jav. Moll. pl. 11, fig. 9 ; Brot, Melan. p. 252 = *Melanoides cylindracea* (Mouss.), H. & A. Ad. Gen. Java.

M. FONTINALIS, Phil. Abbildg. pl. 5, fig. 7 ; Brot, Melan. p. 253.

Pulo-Pinang.

M. MALAYANA, Issel, Moll. Born. p. 100 ; Brot, Melan. p. 253 = *M. tuberculata*, Müll. var. *malayana*, Issel, l.c.

Sarawak, Tangiou-Datou, Borneo.

M. PARREYSSII, Brot, Melan. p. 254.

Java (?).

M. UNIFASCIATA, Mouss. Jav. Moll. pl. 11, fig. 8 ; Brot, Melan. p. 262 = *Melanoides unifasciata* (Mouss.), H. and A. Ad. Gen.

Malang, Java.

M. SCABRA, Müll. in Hanl. Theob. Conch. Ind. pl. 73, figs. 1-4 ; Brot, Melan. p. 266 = *Buccinum scabrum*, Müll. Verm. p. 136, No. 329 = *Helix scabra*, Chemn. Conch. pl. 136, figs. 1259-60 = *Melania spinulosa*, Lam. An. s. V. No. 12 ; Q. and G. Voy. Astrol. pl. 56, figs. 12-14 ; Mouss. Jav. Moll. pl. 11, figs. 11, 12 = *Plotia scabra* (Lam.), H. and A. Ad. Gen. ; Chenu, Man. Conch. fig. 1943.

Java ; India ; Ceylon ; New Guinea, &c.

M. GRANUM, v. d. Busch, Phil. Abbildg. pl. 1, fig. 7 ; Mouss. Jav. Moll. pl. 12, fig. 3 ; Reeve, Conch. Icon. fig. 219 ; Brot, Melan. p. 270 = *M. sorabella* (Phil.), Mouss. Jav. Moll. pl. 12, fig. 2 = *Plotia granum* (v. d. B.), H. and A. Ad. Gen.

Java.

M. MYRUS, Brot, Rev. Zool. 1860, pl. 16, fig. 3 ; Melan. p. 271.

Java ; Borneo (?).

M. ACANTHICA, Lea, Proc. Zool. Soc. 1850 ; Hanley, Conch. Misc. fig. 8 ; Brot, Melan. p. 278 = *M. spinulosa* (Lam.) Reeve, Conch. Icon. fig. 156 a-b (not Lam.) = *Tiara acanthica* (Lea), H. and A. Ad. Gen.

Manila ; Negros ; Moluccas.

M. RUDICOSTIS, Mouss. Brot, Melan. p. 280.

Amboyna.

M. DIADEMA, Lea, Proc. Zool. Soc. 1850 ; Reeve, Conch. Icon. fig. 174 ; Brot, Melan. p. 293 = *Tiara diadema*, H. and A. Ad. Gen.

Philippines ; Amboyna.

M. CYBELE, Gould, Proc. Bost. S.N.H. 1847 : Mouss. Jour. Conch. 1865, p. 199, 1870, p. 214 = *Tiara cybele* (Gould), H. and A. Adams, Gen. = *T. crenularis* (Desh.) H. and A. Ad. op. c. = *Melania cybele*, Brot, Melan. p. 294.

Sumatra ; Fijis ; Philippines.

M. SETOSA, Swainson, Quart. Jour. Sci. 1824 ; Gray, Zool. Jour. I. pl. 8, figs. 6-8 ; Reeve, Conch. Icon. fig. 186 ; Brot, Melan. p. 297 = *Buccinum aculeatum*, Lister, Hist. s. syn. meth. Conch. pl. 1055, fig. 8 = *Helix amarula*, var. Chemn. IX. pl. 134, figs. 1220-21.

Amboyna.

M. ORIENTALIS, A. Adams (*Plotea*), Proc. Zool. Soc. 1853, p. 99 ; Reeve, Conch. Icon. fig. 181 ; Brot, Melan. p. 300 = *Tiara orientalis* (Ad.) H. and A. Ad. Gen. = *Melania hippocastanum*, Brot, Rev. Zool. 1860, pl. 16, fig. 1.

New Caledonia ; Eastern Archipelago.

M. WINTERI, v. d. Busch, Phil. Abbildg. pl. 1, figs. 1-2; Mouss. Jav. Moll. pl. 12, fig. 1; Reeve, Conch. Icon. fig. 157; Brot, Melan. p. 301 = *Plotea winteri* (v. d. B.) H. and A. Ad. Gen.; Chenu, Man. Conch. fig. 1945.

Java.

M. HERKLOTZI, Petit, Jour. Conch. 1853, pl. 7, fig. 10; Brot, Melan. p. 303 = *M. dura*, Reeve, Conch. Icon. fig. 187 = *M. strobilus*, Reeve, op. c. fig. 214 = *Plotea herklotzi* (Petit), H. and A. Ad. Gen.

Java.

M. RUDIS, Lea, Proc. Zool. Soc. 1850; Reeve, Conch. Icon. fig. 172; Brot, Melan. p. 305; Mater. II. pl. 1, fig. 7 = *M. microstoma*, Lea, Proc. Zool. Soc. 1850; Hanl. Conch. Misc. fig. 58 = *Tarebia microstoma* (Lea), H. and A. Ad. Gen.

Batchian, Moluccas.

M. SEMICOSTATA, Phil. Abbildg. pl. 4, fig. 12; Brot, Melan. p. 308 = *Sermyla semicostata* (Phil.), H. and A. Ad. Gen. = *Melania riquetti* (Gratel.) Mouss. Jav. Moll. p. 76.

Samarang, Java.

M. ARMILLATA, Lea, Proc. Zool. Soc. 1850; Brot, Mater. II. pl. 1, fig. 12; Melan. p. 309 = *Tarebia armillata* (Lea), H. and A. Ad. Gen.

Java (?); India.

M. CELEBENSIS, Q. and G. Voy. Astrol. pl. 56, figs. 26-29; Desh. in Lam. An. s. V. No. 25; Brot, Mater. II. pl. 1, fig. 13; = *Tarebia celebensis* (Q. and G.) H. and A. Ad. Gen.; Chenu, Man. Conch. fig. 2014 = *Vibex celebensis* (Q. and G.) Gray, Guide Syst. Dist. = *Melania celebensis*, Brot, Melan. p. 317.

Menado, Celebes; Arrow Island.

M. CRENIFERA, Lea, Proc. Zool. Soc. 1850; Reeve, Conch. Icon. fig. 169; Brot, Melan. p. 323 = *Tarebia crenifera* (Lea), H. and A. Ad. Gen.

Java.

M. GRANOSPIRA, Mouss. Jour. Conch. 1857, p. 161 ; Brot, Mater. II. pl. 1, fig. 10 ; Melan. p. 324.

Bali.

M. COFFEA, Phil. Abbildg. pl. 2, fig. 4 ; Brot, Melan. p. 326 = *Tarebia coffea*, (Phil.) H. and A. Ad. Gen.

Java (?).

M. ASPERULA, Brot, Mater. II. pl. 1, fig. 11 ; Melan. p. 327 = *M. semigranosa* (v. d. B.) Mouss. Jav. Moll. p. 74.

Java.

M. LIRATA, Benson, Glean. of Sc. 1830, II. ; Jour. As. Soc. Beng. 1836, V. 782 ; Reeve, Conch. Icon. fig. 170 = *M. lineata* (Gray), Hanl. Theob. Conch. Ind. pl. 71, fig. 7 ; Phil. Abbildg. pl. 3, fig. 7 ; Mouss. Jav. Moll. pl. 10, fig. 6 = *M. semigranosa*, v. d. Busch, Phil. Abbildg. pl. 1, fig. 13 ; Reeve, Conch. Icon. fig. 1, 67 = *M. flavida*, Mouss. Jav. Moll. pl. 10, fig. 5 = *Tarebia lineata*, H. and A. Ad. Gen. = *T. flavida* (Dunker), H. and A. Ad. Gen. = *Melania lirata*, Brot, Melan. p. 329.

Java ; Bengal, &c.

M. RIQUETTI, Gratel. Mém. plus. esp. Moll. pl. 3, fig. 28 ; (?) Hanl. and Theob. Conch. Ind. pl. 71, fig. 10 ; Brot, Melan. p. 333 = *M. harpula*, Dunker, Phil. Abbildg. pl. 3, fig. 6 = *Tarebia riquettii* (Gratel.), H. and A. Ad. Gen. Rec. Moll. = *Sermyla harpula* (Dkr.), H. and A. Ad. op. cit.

Philippines ; Java (?).

3. CLAVIGER, Haldemann, Silliman's Journal, 1842.

Shell turreted, solid, with a series of longitudinal keels or nodules ; aperture attenuated at the base, sub-canaliculate ; right margin sinuous towards the base, produced in an arcuate manner, furnished with three short and deep parallel plates ; operculum few-whorled, sinistral, with a sub-marginal basal nucleus.

CLAVIGER HIPPOCASTANUM, Reeve, Conch. Icon. fig. 183 ; Brot, Melan. p. 360.

Borneo.

4. FAUNUS, Montfort, Conch. Syst. II. p. 427.

Shell subulate, with an attenuated spire, whorls numerous, smooth, covered with a blackish periostraca; mouth notched in front, columella lip rather thick, with posterior callosity; outer lip spreading with a posterior sinus. (Chenu, who figures the common species here described, only admits it as a sub-genus of *Pirena*). A tropical form with half a dozen species at most, belonging to tropical Asia, the Philippines, and Western Polynesia.

FAUNUS CANTORI, Reeve, Conch. Icon. fig. 2.; Brot, Melan. p. 414 = *Pirena cantori*, Reeve, Conch. Icon. fig. 2, China.

Penang.

F. ATER, L. = *Strombus ater*, L. Syst. Nat. XII. p. 1213; Chemn. pl. 135, fig. 1227 = *Nerita atra*, Müll. Verm. No. 375 = *Cerithium fluviatile*, Féruss. Syst. Conch. p. 69 = *Pirena atra* (L.) Mouss. Jav. Moll. pl. 10, fig. 1; Reeve, Conch. Icon. fig. 5 = *Faunus ater* (L.) H. and A. Ad. Gen.; Gray, Guide Syst. Dist.; Chenu, Man. Conch. fig. 2080; Brot, Melan. p. 410 = *Pirena terebralis*, Lam. An. s. V. No. 1; Q. and G. Voy. Astrol. pl. 56 = *Pirena picta*, Reeve, Conch. Icon. fig. 3 (stat. juv.)

Moluccas; New Guinea; New Ireland; Java; Ceylon; Amboyna, &c.

5. PHILOPOTAMIS, Layard, Ann. and Magaz. Nat. Hist. 1855, p. 138.

Operculum with the apex superior, paucispiral; nucleus *sub-basal*, dextral.

PHILOPOTAMIS OLIVACEUS, Reeve, Conch. Icon. fig. 5; Brot, Gatt. Palud. p. 16.

6. PALUDOMUS, Swainson, Treatise on Malacology, p. 340.

Shell thick, sub-globose or conical, solid, imperforate, smooth or tubercular, covered with an olivaceous epidermis; spire shorter than the aperture, often eroded; aperture ovate; inner lip convex, thickened; outer lip acute, the margin slightly reflexed; operculum annular, nucleus sub-central.

Animal with the mantle margin fringed. Most of the species from India and Ceylon.

PALUDOMUS ISSELI, Brot, Gatt. Palud. p. 31 = *P. crassus*, (v. d. B.), Issel, Moll. Born. p. 95.

Sarawak, Borneo.

P. BROTI, Issel, Moll. Born. p. 92 ; Brot, Gatt. Palud. p. 32.

Sarawak, Borneo.

P. LUTEUS, H. Adams, Proc. Zool. Soc. 1874, p. 585 ; Brot, Gatt. Palud. p. 46 = *P. moreleti*, Issel, Moll. Born. p. 93.

Sarawak, Borneo.

Note.—The Bivalves are reserved for another paper.

EXPLANATION OF PLATES.

PLATES XXVII-XXX.

- Fig. 1.—*Hybocystis elephas*. Animal (♀). See p. 1073.
 Fig. 2.— " " " " (♂). See p. 1074.
 Fig. 3.— " " " " Profile view.
 Fig. 4.— " " " " Radula. See p. 1075.
 Fig. 5a.— " " " " Portion of one of the mandibular plates, very much enlarged.
 Fig. 5b.— " " " " The same, much more highly magnified.
 (The above drawings are those of M. Fischer from the "Journal de Conchyliologie, xxv., 1885, p. 179.)
 Figs. 6-7.—Shell of *Bulimus perversus*, L.
 Figs. 8-9.—Shell of *Hybocystis elephas*, De Morgan.
 Figs. 10-11.—Operculum of " " "
 Fig. 12.—*Bulimus* sp. (?) (Borneo)
 Fig. 13.—*Cyclophorus* sp. Thaiping, Perak.
 Fig. 14.—*Helix albigera*, L.
 Fig. 15.—*Alycaeus gibbus*, Férussac.
 Fig. 16.—*Pirena terebralis*, Lamarck.
 Fig. 17.—*Helix citrina*, L.
 Fig. 18.—*Cyclophorus* sp. Pulo-Pankore, Perak.
 Fig. 19.—*Melania episcopalis*, Lea.
 Fig. 20.—*Nanina brookei*, Adams & Reeve.
 Fig. 21.— " *sumatrensis*, Mousson.
 Fig. 22.— " *mendaiensis*, Semper.
 Fig. 23.— " *hugonis*, Pfeiffer.

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NOTES AND EXHIBITS.

Mr. Ogilby exhibited a specimen of a deep-sea fish (*Chlorophthalmus nigripinnis*), originally described by Dr. Günther in the Ann. of Nat. Hist., 1878, and figured in Vol. XXII. of the "Challenger Reports." The original specimens were taken by the "Challenger" naturalists off Twofold Bay, in 120 fathoms; the specimen exhibited to-night, was captured, a few days ago, off Port Jackson in 70 fathoms, the only other occasion on which the species has been met with since its discovery.

Mr. Ogilby also exhibited a photograph of *Acanthias Blainvillii*, not hitherto recorded from New South Wales, and one of a variety of *Acanthoclinus littoreus*, originally described by Forster in Cook's Voyage, the former having been taken in deep water off Port Jackson, the latter under stones between tide marks at Lord Howe Island.

Mr. Brazier exhibited a spherical stone about $\frac{1}{2}$ inch in diameter, found in the crop of a Goura pigeon (*G. Albertisi*, Salvad.), from Hall Sound, New Guinea. Also a tube of fresh-water shells (*Segmentina australiensis*, E. A. Smith) from Waterloo Swamps.

Mr. MacDonnell showed under the microscope an interesting exhibit of Rotifers (*Megalotrocha* sp.), living in clusters on pond weed.

Mr. Burnell exhibited two living Slow-worms (*Typhlops nigrescens*) from Wentworthville near Parramatta.

Mr. Deane exhibited a remarkable excrescence on a root of *Monotoca elliptica*, found by Mr. J. F. Fitzhardinge in the neighbourhood of Sydney; a specimen of an apodal lizard (*Delma impar*) found by Mr. C. F. Price of Arable, near Cooma, where the species is said to be abundant in basaltic country; and examples of nodular masses enclosing fossils, occurring abundantly in a slaty rock in a cutting near Bredbo on the Goulburn to Cooma Railway.

WEDNESDAY, 29TH AUGUST, 1888.

The President, Professor Stephens, M.A., F.G.S., in the Chair.

The following gentlemen were introduced as visitors—Mr. J. Dennant, F.G.S., Mr. G. Sweet, and Mr. F. G. A. Barnard of Victoria; Mr. J. C. Ross, B.Sc., F.G.S. of Bathurst, and Mr. C. A. Smith, F.C.S. of Sydney; Mr. R. L. Jack, F.G.S., Queensland.

MEMBERS ELECTED.

Messrs. H. S. Rohu, Sydney, and Mr. Bourne, Anatomical Museum, Sydney University, were elected Members of the Society.

The President announced :—

- (1) That the Council had elected Mr. W. M. Bale, F.R.M.S., of Melbourne, a Corresponding Member of the Society.
 - (2) That two Excursions had been arranged for the ensuing month :—
 - (a) September 15th—To Waterfall. Members to meet at Redfern Railway Station to proceed by the 8.22 a.m. train.
 - (b) September 29th—To the Nepean River. Members to meet at Penrith Railway Station on the arrival of the 9 a.m. train from Sydney.
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DONATIONS.

“Illustrated Catalogue of the Museum of Comparative Zoology at Harvard College. No. VII.—Revision of the Echini.” By Alexander Agassiz. Five Pamphlets on Entomological Subjects, by Herr J. Faust. *From the Hon. W. Macleay, F.L.S., &c.*

Catalogue synonymique et systématique des Coléoptères de la Tribu des Carabides." Par J. B. Géhin ; "Catalogus Coleopterorum Lucanoidum." Auctore, Major F. J. Sidney Parry, F.L.S., 3rd Edition. *From T. G. Sloane, Esq.*

"Journal of the Royal Microscopical Society, London, 1888." Part 3. *From the Society.*

"The Journal of the Bombay Natural History Society." Vol. III., No. 2 (1888). *From the Society.*

"Mémoires de la Société de Physique et d'Histoire Naturelle de Genève." Tome XXIX.—Seconde Partie (1886-87). *From the Society.*

"Mémoires de la Société Zoologique de France, pour l'Année 1888." Vol. 1, Nos. 1-3 ; "Bulletin." Tome XIII., Nos. 4 and 5 (1888). *From the Society.*

"Proceedings of the Zoological Society of London, for the year 1888." Part I. ; "Abstract of Proceedings, 19th June, 1888." *From the Society.*

"Feuille des Jeunes Naturalistes." No. 213 (July, 1888). *From the Editor.*

"Bulletin de la Société Belge de Microscopie." XIV. Année No. 7 (1888). *From the Society.*

"Records of the Geological Survey of India." Vol. XXI. Part 2 (1888). *From the Director.*

"L'Académie Royale de Copenhague—Bulletin pour 1887." No. 3 ; "Bulletin pour 1888." No. 1. *From the Academy.*

"Zoologischer Anzeiger." XI. Jahrg. Nos. 282 and 283 (1888). *From the Editor.*

"Proceedings of the Asiatic Society of Bengal." Nos. II. and III. (1888); "Journal," n.s. Vol. LVI., Part ii., No. 4 (1887); Vol. LVII., Part ii., No. 1 (1888). *From the Society.*

Monatliche Mittheilungen des Naturwissenschaftl. Vereins des Reg.-Bez. Frankfurt." Jahrg. V., Nos. 9-12 (Dec., 1887—March, 1888); "Societatum Litterae, 1887." No. 12 (Dec.); "1888." Nos. 1-4 (Jan.—April). *From the Society.*

"Iconography of Australian Species of ACACIA and Cognate Genera." Decades IX.-XI. By Baron Ferd. von Mueller, K.C.M.G., M. and Ph.D., F.R.S. *From the Premier of Victoria through the Librarian, Public Library, Melbourne.*

"Catalogue of Books added to the Radcliffe Library, Oxford University Museum, during the year 1887;" "List of Donations (1887.)" *From the Library.*

"The Victorian Naturalist." Vol. V., No. 4 (August, 1888). *From the Field Naturalists' Club of Victoria.*

"Report of the Committee of Management of the Technological, Industrial, and Sanitary Museum of New South Wales for 1887." *From the Curator.*

Transactions and Proceedings and Report of the Royal Society of South Australia." Vol. X. (1886-87). *From the Society.*

"Mémoires et Publications de la Société des Sciences, des Arts et des Lettres du Hainaut." IVe. Série. Tomes IX. et X. (1887-1888). *From the Society.*

"Catalogue of the Minerals and Rocks in the Collection of the Australian Museum;" "Catalogue of Mammalia in the Collection of the Australian Museum." By G. Krefft, F.L.S., &c. (1873). *From Edward R. Deas Thomson, Esq.*

"Bulletin of the American Geographical Society." Vol. XX., No. 2 (1888). *From the Society.*

"The Journal of Comparative Medicine and Surgery." Vol. IX., No. 3 (1888). *From the Editor.*

"Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, U.S.A." Vol. XIII., No. 9 (1888). *From the Curator.*

"The Australasian Journal of Pharmacy." Vol. III., No. 32 (August, 1888). *From the Editor.*

"The American Naturalist." Vol. XXII. No. 257 (May 1888). *From the Editors.*

"Société Royale Malacologique de Belgique—Procès-Verbal." (July-Dec., 1887). *From the Society.*

"Australian Museum, Sydney—Report of the Trustees for 1887;" "Catalogue of Fishes—Part I. Recent Palæichthyan Fishes." By J. D. Ogilby, F.L.S. *From the Trustees.*

A NOTE ON THE CARENIDES, WITH DESCRIPTIONS OF NEW SPECIES.

BY THOMAS G. SLOANE.

The CARENIDES form a very natural group of the Adephagous sub-family Scaritidæ, in which are included all the wingless Australian Scaritidæ. This group has been made the subject of investigation by Professor Westwood, Count Castelnau, Baron de Chaudoir, the Hon. William Macleay, and the Rev. Thomas Blackburn.

In 1887, Mr. Macleay published a revision of the CARENIDES in Proc. Linn. Soc. N.S.W. (2), Vol. II., when he brought the history of the group down to date, and described sixteen new species. Since then Mr. Macleay has added two new species from the Dawson River, Queensland,* and three new species from the Kimberley district of West Australia:† and the Rev. T. Blackburn has contributed two notes on this group to the Royal Society of South Australia, in one of which‡ he describes six new species; in the other§ he forms the new genus *Epilectus* (described originally as *Eurygnathus* but altered to *Epilectus*, 4th October, 1887).

In the present paper I describe thirteen species as new, and suggest three new sub-generic names, viz., *Neoscaphus*, *Paliscaphus*, and *Chariscapterus*.

In the synoptical table, which I give below, I have used several new features for the purposes of classification. All these characters I believe to be constant, and hope the table, imperfect though it be, will prove useful to the student. The terms "apical plate," for

* Proc. Linn. Soc. N.S.W. (2), Vol. II. p. 972.

† Proc. Linn. Soc. N.S.W. (2), Vol. III. p. 460.

‡ Trans. Roy. Soc. S. Australia, 1887, Vol. X.

§ Trans. Roy. Soc. S. Australia, 1887, Vol. X.

the flattened space towards the apex of the lower side of the anterior tibiæ; "inferior ridge," for the spinous ridge of the lower side of the anterior tibiæ; and "exterior ridge," for the denticulated portion of the outer edge of the anterior tibiæ above the large external teeth, have been proposed by the Rev. T. Blackburn, who contributes a study of the anterior tibiæ of the genus *Carenum* in Trans. Roy. Soc. S.A. Vol. X. (1887), p. 53. He attributes considerable value to the apical plate and inferior ridge from a classificatory point of view, but the exterior ridge he regards merely as useful in describing a species. In these conclusions he is undoubtedly right; the apical plate and inferior ridge differ considerably in species that belong to genera not closely related, but I am unable to indicate exactly these differences. In *Carenum* (using the term in a wide sense) the inferior ridge is a good way to determine the affinity of the various divisions—thus in *Calliscapterus* and its allies the inferior ridge reaches to the tarsus, in *Carenum* it extends hardly so far, reaching only to between the two large external teeth, while in *Carenidium*, &c., it is altogether weaker; these three forms shade into one another through the numerous sub-genera. I have found these terms useful, and shall adopt them in the following descriptions. The end of the apical plate often ends in a spur or tooth, which extends sharply downwards below the tarsus; this tooth I regard as a valuable character for classification.

I have made use of various punctures as aids in arranging the genera and species; these are—(1) the punctures above the eyes, or supra-orbital punctures, (2) those of the margins of the prothorax, and (3) that near the apex of the anterior femora on the lower and inner side. The first two of these features are recognised as of value in arranging the Carabidæ, but, as far as I know, the inner apical femoral puncture has not been used before. I find its presence invariable in that branch of the CARENIDES in which I have used it; while it is also present in all the species

of the tridentate *Carenums* I have examined, though in all the species of *Carenidium*, *Conopterum*, and *Neoscaphus* that I have seen, it has been wanting.

In addition to the characters mentioned above, the following may be mentioned as variable, and of assistance in classification: the antennæ—their general form, the shape of the apical joint, and the relative proportions of the second and third joints; the mentum—both the lobes and the median tooth; the form of the thorax and of the elytra; the legs—the shape of the anterior femora, as well as the length and general appearance of the legs.

I believe the *CARENIDES* may be divided into several main divisions, of which the three most important are *Scaraphites*, *Euryscaphus*, and *Carenum*—regarding as sub-genera of *Carenum* all those names in *italics* in the following list. Of the unidentate genera *Monocentrum* and *Teratidium* I cannot speak definitely, not knowing them.

The arrangement of the genus *Carenum*, proposed by Mr. Macleay (Trans. Ent. Soc. N.S.W. Vol. I. pp. 55 and 146), has been of great use to me; and for the typical *Carenums* all his divisions are admirable. The following synopsis is merely a tabular list of genera in which only those characters which are necessary to divide the different genera and sub-genera have been used:—

Table of the genera and sub-genera of the group *CARENIDES*.

- I. Palpi filiform, last joint not triangular. The second external tooth of the anterior tibiæ nearer the apex than where the inner apical spine rises. Intermediate tibiæ dilatate at apex, with strong bent and obtuse apical spur. Scaraphites.
- II. Palpi with last joint triangular or securiform. The second external tooth of the anterior tibiæ further from the apex than where the inner apical spine rises. Intermediate tibiæ not dilatate at apex.

- A. Elytra circular, or sub-circular, almost or quite as long as wide, with flattened space behind the humeral angles, usually emarginate at base. Anterior tibiæ bidentate externally.

Euryscaphus.

- B. Elytra ovate, at least a quarter longer than wide, without flattened space behind humeral angles. Anterior tibiæ bi- or tridentate externally.

Carenum.

- a. Anterior tibiæ tridentate externally.

- b. Two supra-orbital punctures.

Elytra costate near lateral margins.....*Philoscaphus*.

Elytra foveate.....*Laccopterum*.

Elytra smooth, bipunctate towards apex.....*Calliscapterus*.

- bb. One supra-orbital puncture.

Prothorax convex, posterior angles rounded, sinuate behind*Chariscapterus*.

Prothorax rather flat, posterior angles square, truncate behind.....*Platythorax*.

- aa. Anterior tibiæ bidentate.

- c. Anterior femora with a puncture below and near the apex on inner side.

- d. Frontal sulci sub-parallel, or only slightly divergent behind.

- e. Clypeus truncate between the lateral teeth.....*Carenum*.

- dd. Frontal sulci linear, diverging continuously behind.

- ee. Clypeus with slight median excavation.

- f. Antennæ sub-moniliform, incrassate towards apex.

Basal punctures in single row.....*Carenoscaphus*.

Basal punctures placed irregularly near humeral angle.....*Eutoma*.

Carenum scaritoides, Westw., and its congeners by their large head, with the frontal sulci diverging widely behind. I do not see how these latter can be placed in a different sub-genus to *Carenum Bonelli*, Brulle.

3. *Epilectus*. This seems a very distinct genus, which will probably prove of equal value with *Scaraphites*, *Euryscaphus*, and *Carenum*. I believe *Neocarenum Mastersi*, MacL., will come into this genus. I have lately seen in the Melbourne Museum a species which I attribute to this genus. It was taken by Mr. Kershaw in the north-west of Victoria.

SCARAPHITES INSULANUS, sp.nov.

Niger, subnitidus; *capite* transverso-quadrato, supra oculos unipunctato, fronte bifoveolata; *prothorace* subcordato, laevi, postice utrinque obliquo, basi leviter emarginato, canaliculato; *elytris* subconvexis, nonnihil obovatis, striis quinque singulatim leviter impressis, serie sublaterali distantium punctorum notatis, marginibus humeros versus confertim punctatis; *tibiis anticis* extus tridentatis, *intermediis* apice dilatatis, extus valde dentatis.

Long. 22 mm., lat. $12\frac{1}{2}$.

Black, rather dull. Head broad (6×10)* and rectangular, the frontal foveæ rugose, likewise the mandibles, a single puncture above each eye. Prothorax transverse (7×11), wider than the head, widest in front, the sides straight and a little narrowed to the posterior angles which are rounded, behind sloping obliquely on each side to the base which is lightly emarginate, the disc smooth, the median line lightly impressed, ending both in front and behind in a faint transverse line. Elytra rather obovate ($16 \times 12\frac{1}{2}$), the lateral margins wider in front, thickened and strongly turned inwards at the humeral angles; along the anterior half of the margins a closely placed row of ocellated punctures; on each elytron five lightly impressed punctulate striæ, and on the

*In this and the following descriptions the length measured in the middle, and the breadth measured at the widest part of the head, thorax and body, are indicated by figures (millimetres) in brackets.

space between the fifth stria and the margin, near the margin, a row of five or six punctures at wide intervals; near the apex a few other punctures; the elytra have a dull appearance owing to numerous minute scratches on their surface. The anterior tibiae are tridentate externally.

This species comes near *S. rotundipennis*, from which the prothorax emarginate at the base, the broader and less striate elytra, and its generally wider and flatter shape will help to distinguish it.

Loc.—King's Island, Bass' Strait (taken by Mr. C. French, jun., during the visit of the Field Naturalists' Club of Victoria to the island last summer).

SCARAPHITES PACIFICUS, sp.nov.

Niger, nitidus, lævis; *capite* sub-quadrato, supra oculos unpunctato, fronte bifoveolata; *prothorace* late transverso, vix cordato, basi truncato, lateribus marginatis, basi haud marginato, canaliculato; *elytris* sub-depressis, obovatis, antice truncatis, humeris haud notatis, striis sex punctulatis singulatim impressis, serie sublaterali distantium punctorum notatis, marginibus humeros versus punctatis; *tibiis anticis* valide tridentatis, intermediis apice dilatatis et extus dente curvato obtuse armatis.

Long. 34 mm., lat. 15.

Of a shining, pitchy-black. Head sub-quadrate (6×9), smooth except the frontal foveæ, these less wrinkled than is usual in the genus, one supra-orbital puncture on each side. Prothorax smooth, very transverse (7×12), widely but very slightly emarginate in front; the sides parallel in the middle, rounded off near the anterior angles and at the posterior angles, sloping obliquely on each side behind to the base, which is truncate; a reflexed margin on the sides but entirely wanting on the base; the median line distinctly, though lightly marked, not reaching either the anterior or posterior margin; a light oblique line on each side of the anterior angles. Elytra rather flat, obovate ($17\frac{1}{2} \times 15$); the base narrower than the thorax; each elytron with six light punctulate striae; the base truncate, with the

angles rounded; the lateral margins reflexed, without any thickening at the humeral angles; a lateral row of punctures along the anterior half of the margins, and a sub-lateral row of a few widely placed punctures on each side. Anterior tibiæ with three strong teeth externally; intermediate dilatate towards the apex, with a compressed obtuse curved tooth externally.

Loc.—Eucla, West Australia.

EURYSCEPHUS ARENARIUS, sp. nov.

Niger, nitidissimus; *capite* subquadrato, supra oculos unipunctato, sulcis profunde impressis, antice fortiter divergentibus, postice leviter incurvis et obsolete conjunctis; *prothorace* transverso, marginato, canaliculato, postice rotundato, lateribus paulum rotundatis, angulis anticis leviter productis, marginibus reflexis, duobus punctis marginalibus utrinque impressis; *elytris* lævigatis, convexis, subcircularibus, antice leviter emarginatis, humeris notatis, reflexe marginatis; *tibiis anticis* bidentatis, intemediis ad apicem extus breviter dentatis.

Long. 29 mm., lat. 12 mm.

Of a shining black. Head subquadrate, (5×8), with one supra-orbital puncture on each side; frontal sulci curved inwards behind. Prothorax transverse ($6\frac{1}{2} \times 11$), shortly rounded and somewhat sinuate behind; the base lobate; the sides slightly rounded; the margins much reflexed, particularly at the posterior angles; the median line distinctly marked, crossed throughout its length by fine transverse striolæ; behind there is the usual transverse line defining the basal portion; in front there is a transverse impression near each anterior angle. Elytra convex, nearly circular (13×13); the base widely emarginate; the lateral margins somewhat flattened, with the edge reflexed, especially at the humeral angles; a row of punctures along the lateral margins, and on the base of each elytron a few punctures in a single row; the suture distinctly marked. The anterior tibiæ bidentate; the exterior ridge with five projections, of which the two lowest are teeth visible from above.

Loc.—Mulwala, Murray River, N.S.W.

I believe this to be the species which Count Castelnau regarded as *Scaraphites lucidus*, Chaud. ; but it does not agree with the description of *S. lucidus*. It is not uncommon on the sandhills near Mulwala. The description above is taken from a rather large specimen. In size it varies, my specimens ranging from 22 mm. to 30 mm. in length. Usually the elytra are quite smooth, but an occasional specimen has traces of elytral striæ. It probably has a wide range, for recently I took a specimen at Coonabarabran, N.S.W., which I cannot separate from this species, the only noticeable difference being its indistinctly striate elytra.

EURYSCAPHUS FEROX, sp.nov.

Niger, nitidus ; *capite* magno transverso, supra oculos bipunctato, sulcis frontalibus brevibus, antice fortiter divergentibus, postice linea curvata conjunctis ; *prothorace* transverso, marginato, leviter canaliculato, postice rotundato, lateribus paulum curvatis, angulis anticis vix productis, marginibus utrinque bipunctatis ; *elytris* convexis, sub-circularibus, basi leviter emarginato, humeris notatis reflexisque, confertim punctulatis, disco postice fortiter bipunctato ; *tibiis anticis* bidentatis, intermediis extus spina apicali valde armatis.

Long. 35 mm., lat. 16 mm.

Not of such a shining black as *E. arenarius*. Head transverse ($6\frac{1}{2} \times 11$), a little narrowed behind the eyes ; the frontal sulci short, connected behind by a transverse impression, in front turning sharply outwards ; the head wrinkled between the sulci and the eyes. There are two supra-orbital punctures. Prothorax transverse (8×14), almost truncate in front, rounded behind, with the sides slightly rounded ; a wide reflexed margin on the sides and behind becoming narrower on the base, thus causing the base to appear feebly lobate ; the anterior angles obtuse and hardly produced ; the median line lightly marked and crossed by transverse striolæ ; some longitudinal wrinkles along the anterior margin ; the basal portion of the thorax defined by a transverse impression. Elytra convex, longer than wide (18×16) ; the

margins reflexed at the humeral angles, where they are wider than behind; the sides rounded off to the shoulders, which are rather prominent; the base lightly excavated; the surface of the elytra covered closely with faint punctures (apparent without a lens); a large shallow puncture on the apical half of each elytron, nearer the suture than the margin; a row of punctures (seven) on the base of each elytron, and a row of punctures along the lateral margins; the suture lightly impressed. The anterior tibiae bidentate, the exterior ridge with two distinct external teeth, above which are two small projections; intermediate tibiae spinous, with a strong external tooth at the apex.

Loc.—Tintinallongy, Wilcannia, N.S.W. (Dr. H. A. Ellis).

This species appears to resemble *E. Tatei*, Blackburn, from which it seems to differ by its less lobate prothorax, and by the puncturation of the elytra. For the opportunity of describing this and the other specimens collected by Dr. Ellis, I have to thank Mr. A. Sidney Olliff.

CALLISCAPTERUS SPECIOSUS, sp. nov.

Splendide chalybeo-viridis; *capite* nigro, subquadrato, supra oculos bipunctato, sulcis frontalibus antice fortiter postice late divergentibus; *prothorace* late transverso, valde reflexo-marginato, antice truncato, angulis posticis lateribusque rotundatis, basi leviter lobato, disco canaliculato, antice transverse impresso, marginibus lateralibus utrinque tripunctatis; *elytris* sub-ovatis, subplanatis, antice angustioribus truncatis, marginatis, sutura fortiter impressa, postice bipunctatis; *tibiis anticis* tridentatis.

Long. 23 mm., lat. 8 mm.

Brilliant metallic green, with a bluish tint in some lights. Head, middle of prothorax and underparts black, the inflexed margins of the elytra green. In general appearance like *C. Odewahnii*, but with the elytra flatter, more rounded on the sides, and entirely of the one brilliant metallic colour. Head flat, subquadrate ($3\frac{3}{4} \times 5\frac{1}{2}$), with the frontal sulci widely diverging behind where a faint curved impression is noticeable behind them; two supra-

orbital punctures. Prothorax widely transverse (5×8); a trifle wider than the elytra; rounded on the sides, widest at about half its length, and narrower in front than at the posterior angles; lateral margins wide and reflexed; base lobate, the basal part defined by a transverse line, a distinct transverse line in front; the median line distinct, ending in front and behind in the transverse lines; an oblique impression near the lateral angles of the base; each lateral channel with three punctures. Elytra of a somewhat oval form ($7\frac{3}{4} \times 11$), the sides widest at the middle of the length, and narrowing equally towards base and apex; the base truncate and declivous; the lateral margins reflexed, wider towards the apex, at the humeral angles slightly thickened and erect; the suture rather deeply impressed; two discoidal punctures towards the apex. The anterior tibiæ tridentate as in *C. Odewahnii*.

Loc.—Gascoigne River, West Australia.

I am indebted to Mr. C. French of the Botanic Museum, Melbourne, for this handsome species.

CHARISCAPTERUS, subgen. nov.

Caput magnum, supra oculos unipunctatum; *frons* bisulcata, sulcis parallelis.

Palpi maxillares ordinarii, apice dilatati truncati; *labiales* securiformes.

Antennæ sub-moniliformes.

Prothorax valde transversus, late marginatus.

Elytra late marginata, postice bipunctata.

Tibiæ anticæ valde tridentatæ; *femora antica* ad apicem intus punctata.

This subgenus will come between *Calliscapterus* (as represented by *C. campestris*, *C. Odewahnii*, &c.) and *Platythorax*. The anterior tibiæ are much more strongly tridentate than in *Calliscapterus campestris*, being very like those of *Platythorax*.

interioris; the shape of the elytra also differs from that of *C. campestris* in not being narrowed at the base. In *C. campestris* and its allies there are three marginal punctures on each side of the prothorax, but in my single example of *Chariscapterus opulens* there appears to be but one marginal puncture on each side, viz., that at the posterior angle; this I believe not to be a constant character, the normal number will probably be found to be two on each side, at the anterior and posterior angles.

Carenum cupreo-marginatum, Blackburn, will come into this sub-genus, as will probably *C. porphyreum*, Bates, and possibly *C. breviforme*, Bates.

CHARISCAPTERUS OPULENS, sp. nov.

Nitidus, lævis, elytris viridi-micantibus; *capite* magno, subquadrato, supra oculos unipunctato, ad clypeum haud punctigero, sulcis frontalibus parallelis, antice fortiter divergentibus; *prothorace* ad latera æneo, margine cupreo, late transverso, antice truncato, angulis anticis productis, postice sinuato, marginato, leviter canaliculato; *elytris* margine splendide cupreo, prothoraci latitudine æqualibus, late reflexo-marginatis, antice truncatis, sutura leviter impressa, postice bipunctatis; *tibiis anticis* tridentatis, infra tarsos apice dente longiusculo armato.

Long. 21 mm., lat. 7 mm.

Under parts, head, and disc of thorax black, elytra bright metallic green, thorax and elytra with vivid cupreous margin. Head large, square ($4\frac{1}{4} \times 5\frac{3}{4}$), smooth, with one supra-orbital puncture on each side; the frontal sulci parallel, in front turning sharply outwards. The frontal puncture, which is almost invariably present among the *Carenides* between the out-turned frontal groove and the clypeus on each side, is wanting in the present species. Prothorax convex, widely transverse ($4\frac{1}{2} \times 7$), with wide reflexed margin along the sides and base; truncate in front, with the anterior angles obtuse, and considerably advanced; shortly rounded at the posterior angles and sinuate behind, the base being lightly emarginate; the median line distinct. Only

the marginal punctures at the posterior angles present in my specimen. Elytra smooth, broad, ovate (10×7), with wide reflexed margin; base truncate, not narrowed; apex widely rounded; sides parallel; humeral angles distinct, with edge thickened and turned backwards; two discoidal punctures at about one-third of the length of the elytra from the apex, a row of punctures along the lateral margins, and a few punctures on the base; the suture rather lightly impressed. Anterior tibiæ tridentate externally; the exterior ridge with three projections, the lowest rather distinct; the inferior ridge reaches the tarsus; a tooth projects downwards below the tarsus.

This species comes near *Carenum cupreo-marginatum*, Blackburn.

Loc.—Eucla, West Australia.

PLATYTHORAX INTERIORIS, sp. nov.

Niger, nitidus; prothorace elytrisque tenue cyaneo-marginatis; capite magno, subquadrato, supra oculos unipunctato; sulcis frontilibus antice fortiter, postice leviter divergentibus; clypeo inter dentes laterales truncato; prothorace lævi, late transverso, canaliculato, lateribus parum rotundatis, valde marginatis, antice truncato, angulis anticis rotundatis, productis, posticis subrectis, multo reflexioribus, basi sinuato, breviter lobato, marginibus ad angulos anticos posticosque puncto setigero impressis; elytris convexis, prothoracè parum angustioribus, basi subtruncato, humeris vix notatis, obsolete seriatim punctulatis, postice duobus punctis majoribus impressis, tibiis anticis extus tridentatis.

Long. 22 mm., lat. 8 mm.

Black, with a narrow bluish-green margin to the prothorax and elytra. Head large, subquadrate ($4 \times 5\frac{1}{2}$); the frontal sulci deep, diverging slightly towards the back, in front turning sharply out towards the anterior angles of the head; pre-ocular processes prominent; the clypeal teeth strong, the clypeus truncate between them; one supra-orbital puncture on each side. Prothorax

smooth, squarely transverse ($4\frac{1}{2} \times 8$), somewhat wider than the elytra; truncate in front, with the angles advanced, the sides a little rounded; the posterior angles square; the base sinuate, with a short wide lobe; the lateral margins rather widely reflexed, especially at the posterior angles; the disc rather flat, with a distinct median line; two lightly marked setigerous punctures on each lateral margin, one towards the anterior angle, and one at the posterior angle; in front a faint transverse impression becoming more distinct towards each anterior angle. Elytra convex ($11 \times 7\frac{3}{4}$), with the sides a little rounded, widest at about one-third of their length from the base; the humeral angles rounded, with the edge a little turned back; the base truncate; seven rows of closely placed shallow punctures on each elytron; two larger discoidal situated towards the apex; three punctures in a single row on the base of each elytron; the usual row of punctures extending along each lateral margin. The anterior tibiae tridentate externally, the exterior ridge with three projections; the inferior ridge serrate, reaching nearly to the tarsus; the apical plate without any projecting tooth.

Loc.—Tintinallöy, Wilcannia, N.S.W. (Dr. H. A. Ellis).

This species is distinct from the other two described species of the sub-genus *Platythorax*.

CARENUM ARENARIUM, sp. nov.

Nigrum, nitidum, prothorace elytrisque violaceo-marginatis; *capite* sub-quadrato, supraoculos bipunctato, sulcis frontalibus profunde impressis, antice fortiter postice leviter divergentibus, postice fossula curvata conjunctis; *prothorace* transverso, lateribus subrotundatis, marginibus tenuiter reflexis, angulis anticis vix productis, posticis rotundatis, postice utrinque levissime emarginato, basi truncato, vix lobato, disco canaliculato, confertim leniter transversim ruguloso, marginibus utrinque tripunctatis; *elytris* prothorace paullum latioribus, basi truncato, humeris notatis, quadripunctatis, subtilissime striatis; *tibiis anticis* bidentatis.

Long. 22-26 mm., lat. 7-8 mm.

Black, nitid, prothorax and elytra with violet margin. Head large, sub-quadrate (5×6), narrowed behind the eyes; two supra-orbital punctures on each side; frontal sulci converging slightly towards the front, where they turn sharply out towards the anterior angles of the head; occiput with a distinct transverse impression which connects the sulci behind. Prothorax large, transverse (6×8), rounded behind, slightly rounded on the sides; the anterior angles hardly at all advanced, the margins narrow; the median line distinct, and crossed throughout its length by minute transverse striolæ; three marginal punctures on each side. Elytra large, rather convex ($13 \times 8\frac{1}{2}$), slightly wider than the thorax, truncate at the base, rather parallel on the sides; the surface appears quite smooth to the eye, but with a lens very faint longitudinal striæ may be discerned; the lateral margins narrow, and a little thickened at the humeral angles; two punctures near the shoulders, and two towards the apex. Anterior tibiæ bidentate.

This species is very closely allied to *C. interruptum*, MacL.; it is, however, a rather larger insect, more brightly coloured, and has the striæ of the elytra less distinct.

Loc.—Mulwala, N.S.W.

CARENUM DECORUM, sp. nov.

Nitidum, elytris violaceis viridi-marginatis, prothoracis disco nigro, lateribus violaceis; capite nigro, supra oculos unipunctato, sulcis frontalibus profunde impressis, antice posticeque fortiter divergentibus; prothorace transverso, angulis anticis obtusis leviter productis, posticis rotundatis, pone angulos posticos emarginato, lateribus basique reflexe marginatis, basi emarginato, canaliculato, marginibus ad angulos anticos posticosque punctatis; elytris ovatis, sub-convexis, leviter striatis, vel subsulcatis, postice bipunctatis; tibiis anticis bidentatis.

Long. 18 mm., lat. 6 mm.

Elytra of a rich blue colour, brighter towards the sides, the middle of the disc sometimes almost black, the margins of a pale

bluish-green ; head and thorax black, the edges of the latter suffused with blue. Head, subquadrate (4×5), rather narrowed behind the eyes, with one supra-orbital puncture on each side ; the frontal sulci deep, diverging backwards behind the supra-orbital puncture, and in front turning out sharply towards the anterior angles of the head. Prothorax transverse (4×6), rounded on the sides and at the posterior angles ; the anterior angles obtuse and slightly advanced ; the sides and base with a reflexed margin which is wider on the base, base sublobate, emarginate in middle ; a rather sharp emargination outside each lateral angle of the base making these angles very distinct, and giving to the base its sublobate appearance ; median line distinct ; a marginal puncture near each anterior and posterior angle. Elytra ovate (11×6), not very convex, truncate at the base, rounded on the sides, distinctly striate, with two discoidal punctures towards the apex ; the lateral margins narrow, thickened and upturned at the humeral angles ; a single row of punctures on the base, and along the lateral margins. Anterior tibiae bidentate externally ; the projections of the exterior ridge (four) feeble.

Loc.—Coonamble district, and Coonabarabran, N.S.W. Taken in sandy soil in June last.

This species comes near *C. ianthinum*, MacI., from which its flatter form, more strongly striate elytra, and the different shape of the basal part of the thorax will serve to distinguish it.

CARENUM LÆVICOLLE, sp. nov.

Nigrum, nitidum, prothorace elytrisque violaceo-marginatis ; *capite* subquadrato, supra oculos haud punctigero, sulcis frontalibus antice fortiter postice leviter divergentibus ; *prothorace* lævi, transverso, antice late emarginato, postice rotundato, basi levissime emarginato, fortiter reflexo-marginato, canaliculato, antice linea transversa impresso ; *elytris* lævis, impunctatis, convexis, basi levissime emarginato, sutura distincte impressa, tenue marginatis ; *tibiis anticis* extus bidentatis.

Long. 19 mm. lat. $6\frac{1}{2}$ mm.

Black, nitid, prothorax and elytra with violet margin. Head subquadrate ($3\frac{1}{2} \times 4\frac{1}{2}$) supra-orbital punctures wanting, frontal

sulci converging slightly in front, then turning sharply out towards the anterior angles of the head. Prothorax transverse ($3\frac{1}{2} \times 6$), semicircular, anterior angles advanced; base lightly emarginate; median line distinct, terminating in front in a transverse impression. No trace of prothoracic marginal punctures (in my single specimen). Elytra smooth, rather convex, wider than the thorax ($6\frac{1}{2} \times 9$), slightly emarginate at the base, narrowed towards the apex; suture lightly marked; margins narrow, slightly thickened, and upturned at the humeral angles; two or three fine punctures on the base near the shoulders, and along the lateral margins a row of widely placed punctures; without discoidal punctures. Anterior tibiæ bidentate.

Loc.—Johnstone River, North Queensland.

This species has very much the appearance of *Carenum lævipenne* Macl., to which it is allied.

PALISCAPHUS, sub-gen. nov.

Caput supra oculos bipunctatum; *frons* profunde bisulcata; *clypeus* ad labri latera utrinque longius dentatus, medio levissime emarginatus.

Palpi maxillares tenues, apice sub-truncati, *labiales* modice securiformes.

Labrum truncatum.

Mentum dente medio brevi valide instructum.

Antennæ breves, moniliformes, articulis 1° et 2° glabris, 3° et 4° bisetosis, septem ultimis hirsutis, 2° et 3° æqualibus, ultimo brevi, apice rotundato.

Prothorax transversus, marginibus utrinque bipunctatis.

Elytra sub-convexa, disco apicem versus bipunctato.

Tibiæ anticæ extus bidentatæ; *femora antica* subtus intus tripunctata.

The short moniliform antennæ, not thicker towards the end, are the most conspicuous feature of this sub-genus. Its position will be near *Eutoma* and *Carenoscaphus*, from both of which sub-genera the more transverse thorax will readily distinguish it.

PALISCAPHUS FELIX, sp.nov.

Lævigatus, splendide cæruleus, prothorace elytrisque tenuiter viridi-marginatis; *capite* sub-quadrato, supra oculos bipunctato, sulcis frontalibus antice fortiter postice leviter divergentibus, postice fossula transversa conjunctis; *antennis* brevibus, moniliformibus; *prothorace* transverso, tenue marginato, antice truncato, angulis anticis marginatis vix productis, posticis rotundatis, marginibus ad angulos anticos posticosque punctatis; *elytris* ovalibus, sub-convexis, prothorace parum latioribus, humeris rotundatis, postice bipunctatis; *tibiis anticis* extus bidentatis.

Long. 17 mm., lat. $5\frac{1}{2}$ mm.

This beautiful species is of a bright metallic blue colour with a narrow green margin to the prothorax and elytra. Head sub-quadrata ($3 \times 4\frac{1}{2}$), narrowed behind the eyes which are prominent; the frontal sulci diverging backwards, behind connected by a transverse impression extending behind the eyes; two supra-orbital punctures, and the usual frontal punctures near the clypeus; labrum short and truncate in front; the projecting teeth of the clypeus strong, between them the clypeus lightly emarginate in the middle. Prothorax transverse ($3\frac{1}{2} \times 5$), truncate in front, with the angles rather acute, margined, and very slightly advanced; behind rounded; the sides and base with a narrow reflexed margin, rather thicker on the base; the basal portion of the prothorax defined by a curved transverse line, rather elevated between this line and the margin; the median line distinct, not reaching the anterior margin; a short rather oblique transverse line at each anterior angle, and a faint impression on each side of the base; two setigerous punctures on each margin, one near the anterior angle, the other at the place of the posterior angle. Elytra oval ($9 \times 5\frac{1}{2}$), a little wider than the prothorax, somewhat convex, the upper surface being rather flat; bipunctate towards the apex; the lateral margins narrow; the marginal channel rather deep, and closely set with punctures; the suture deeply marked; the base obliquely declivous towards each humeral angle, and

marked with irregularly placed punctures. Anterior tibiæ bidentate externally, with a projection at the base of the upper tooth; below not offering any distinctive difference from *Eutoma*.

Loc.—Tintinallogy, Darling River, N.S.W. (Dr. H. A. Ellis).

CONOPTERUM MODESTUM, sp. nov.

Nigrum, prothorace elytrisque viridi-limbatis; *capite* magno, postice angustato, supra oculos bipunctato, sulcis frontilibus profunde impressis, antice fortiter postice late divergentibus; *prothorace* tenue marginato, antice truncato, angulis anticis rotundatis, obtusis vix productis, posticis rotundatis, pone angulos posticos utrinque obliquo, fortiter canaliculato, basi late sublobato truncato, marginibus lateralibus utrinque bipunctato; *elytris* ovatis, lateribus parallelis, disco planato, sutura fortiter impressa, subtiliter striatis, tenue marginatis, antice posticeque bipunctatis.

Long. 21 mm., lat. $6\frac{1}{2}$.

Black, prothorax and elytra widely margined with green. Head large ($5 \times 5\frac{1}{2}$), narrowed behind the eyes, rather convex; the frontal sulci widely diverging behind, in front bifurcating, enclosing the frontal punctures; the lateral teeth of the clypeus acute, the space between them emarginate. Prothorax a little wider than long ($5 \times 6\frac{1}{2}$), truncate in front; the anterior angles obtuse, and very slightly advanced; the sides a little rounded; the posterior angles rounded off, behind them narrowing obliquely to the base, which is widely sublobate and truncate; the median line deeply impressed, and crossed throughout by transverse striolæ; an oblique longitudinal impression at each basal angle; the lateral margins with two punctures, one towards the anterior angle, the other at the posterior angle. Elytra oval ($7\frac{3}{4} \times 11$), the disc flat with the suture strongly impressed, towards the edges the elytra are abruptly rounded, near the suture they are faintly striate, the sides being smooth; the sides are parallel; the margins narrow, rounded off and not thickened at the shoulders; some irregularly placed punctures in

a depression on the base of each elytron, and a row of separate punctures along the lateral margins; a strong puncture at the shoulder and another near the apex of each elytron. [The anterior legs are wanting in my specimen]. The prosternum is rounded behind, and without any longitudinal excavation.

The elytra with convex rounded sides, and flat on the disc, are the most conspicuous features of this species.

Loc.—Nicol Bay, West Australia. I am indebted to Mr. C. French for my specimen.

NEOSCAPHUS, gen.nov.

Caput pone oculos angustatum, supra oculos bipunctatum; *clypeus* ad labri latera acute dentatus, medio leviter excavato; *frons* fortiter bisulcata.

Palpi maxillares securiformes; *labiales* latissime securiformes.

Labrum truncatum.

Antennæ tenues, articulo ultimo obtuso.

Mentum dente medio longius instructum.

Prosternum postice rotundatum, inter coxas longitudinaliter subexcavatum.

Prothorax longiusculus, margine utrinque bipunctato.

Elytra cylindrica, basi excavato.

Tibicæ anticæ extus bidentatæ; *femora* antica ad apicem intus haud punctigera.

I have placed this genus next *Conopterum* to which it seems more closely allied by its elongate shape and strongly securiform palpi, than to any other that I know; the head, however, is much lighter than in *Conopterum*, and the shape of the thorax is different.

NEOSCAPHUS SIMPLEX, sp.nov.

Niger, nitidus; *capite* lævi, pone oculos angustato, supra oculos bipunctato, sulcis frontalibus antice fortiter postice

leviter divergentibus, occipite transverse impresso; *prothorace* latitudine vix longiore, tenne marginato, marginibus haud reflexis, antice truncato, postice late sublobato, lateribus parallelis, basi rotundato, marginato, linea transversa impresso, duobus punctis marginalibus utrinque notato, leviter canaliculato; *elytris* elongatis, convexis, antice paulo angustatis, basi valde emarginato, humeris fortiter notatis erecte marginatis, apice obtuse mucronatis, sutura valde impressa, segmentis abdominalibus et coxis posticis rugulosis impunctatisque; *tibiis anticis* extus bidentatis.

Long. 25 mm., lat. 7 mm.

Black, shining, the prothorax less nitid than the elytra. Head light, subquadrate ($3\frac{3}{4} \times 4\frac{1}{2}$), narrowed behind the eyes; two supra-orbital punctures; frontal sulci converging towards clypeus from behind the supra-orbital punctures, in front they appear to bifurcate enclosing the frontal punctures. Prothorax as long as wide ($6\frac{1}{2} \times 6\frac{1}{2}$), truncate in front, parallel on the sides, rounded off at the posterior angles towards the base, which is widely sublobate and rounded; the lateral margins narrow, not reflexed, that of the base more prominent; median line very lightly impressed; each lateral channel with two punctures. Elytra nearly twice as long as broad (13×7), cylindrical, rather wider towards the apex than at the shoulders, smooth, without discoidal punctures; suture deeply impressed; the base strongly emarginate, with the humeral angles conspicuous; the lateral margins very narrow, thicker and erect at the shoulders; a blunt projection at the apex. The legs rather light; the anterior tibiae bidentate, with both the "exterior" and "inferior" ridges weak; the apical puncture on the inner side of the anterior femora is wanting. The abdominal segments transversely wrinkled, and without the usual punctures. The posterior coxae are without any impressed punctures. This is the only case of a Carenid without posterior coxal punctures, that I have seen.

Loc.—Mulwala. N.S.W. (A single specimen in my collection).

This is a very distinct form differing in the shape of its thorax and in its elytra, (which are very cylindrical, emarginate at the

base, and obtusely mucronate at the apex) from all the forms of *Carenum* known to me.

Besides those described by me in the present paper, the following species have been added to the Carenides since the Hon. William Macleay's revision of 1887 :—

Philoscaphus Barnardi, Macl.; *Calliscapterus foveolatus*, Macl.; *C. viridiceneus*, Macl.; *Carenoscaphus viridissimus*, Macl.; *Carenum obsoletum*, Macl.; *C. rugatum* (*Calliscapterus*), Blackb.; *C. Macleayi*, (*Calliscapterus*?), Blackb.; *C. cupreomarginatum*, (*Chariscapterus*), Blackb.; *C. fugitivum*, Blackb.; *C. inconspicuum*, Blackb.; *Eutoma Adelaideæ*, Blackb.; *Epilectus fortis*, Blackb.

I append the names of the species found at Mulwala, N.S.W., which will be found of interest as a local list :—

Euryscaphus bipunctatus, Macl.

E. arenarius, Sloane.

Philoscaphus tuberculatus, Macl.

P. carinatus, Macl.

Laccopterum loculosum, Newm.

L. spencii, Westw.

Calliscapterus campestris, Macl.

Carenum scaritoides, Westw.

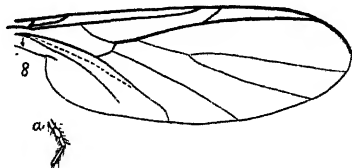
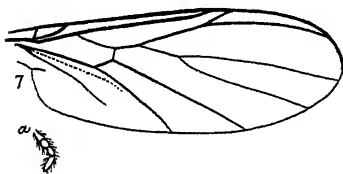
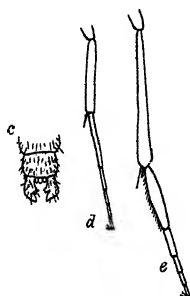
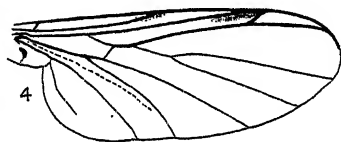
C. arenarium, Sloane.

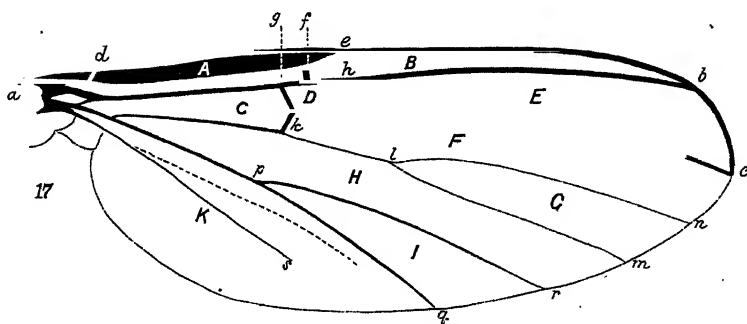
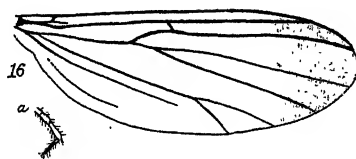
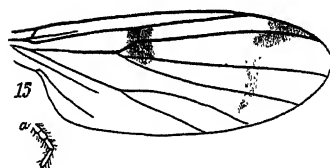
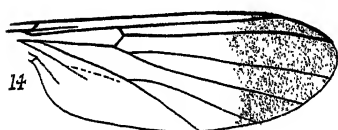
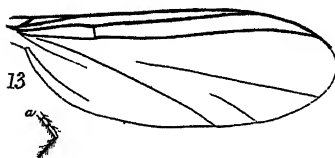
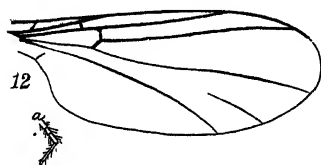
C. murrumbigense, Macl.

Eutoma loddonense (?), Casteln.

Carenidium lacustre, Macl.

Neoscaphus simplex, Sloane.





DIPTERA OF AUSTRALIA.

By FREDERICK A. A. SKUSE.

PART III.—THE MYCETOPHILIDÆ.

(PLATES XXXI, XXXII.)

The Australian species of Mycetophilidæ already recorded amount only to the insignificant total of four, referable to as many different genera; these species were described about thirty-two years ago by Francis Walker in Vol. I. of "*Insecta Saundersiana*," since that time our indigenous "fungus-midges" have enjoyed a period comparatively free from molestation, except that in certain localities, where insect-life once held an undisputed dominion, the ruthless hand of man has visited and laid bare large tracts of country once replete with native vegetation which afforded sustenance for legions.

Altogether I have discriminated thirty-one species, but for seventeen of these I have been compelled to create nine distinct new genera, chiefly on account of the venation of the wings, but also because of peculiarities in the structure of the antennæ and palpi, and in some instances in the character of the legs; three of my new genera have eleven species distributed between them, and the remaining six have been formed for the reception of single species, all of which I consider warrant the innovation. Some of these newly-discovered forms appear from their external characters to have a close relationship to old-established genera: but were the scope of these in any instance enlarged, the question might arise, whether by treating a large number of other genera in the same way the total might not be considerably lessened; though by doing so the determination of the contained species

would be made much more difficult, or it would necessitate forming numerous sub-sections whereby to define the peculiarities of several series of species having details of structure in common. Insufficiently characterised genera cause much difficulty, particularly when the type-specimens are not at hand for reference; and a glance at the synonymy will show to what a lamentable extent worthless genera encumber our classification; on the other hand, a genus established which at once sums up the joint characters of the species which belong to it, or which serves as an index to one or more species, cannot fail to be of service to the study of such a multitudinous order of insects as the Diptera, whose identity of structure in certain families and sub-families is maintained to such a puzzling degree. Much confusion has been perpetrated by the manner in which some authors have ignored minor details in structure—minor in comparative magnitude, but important in significance; for instance, the sub-costal cross-vein, auxiliary vein, and the exact position of other veins, to which Winnertz, in his masterly work on the Mycetophilidæ, attaches much importance, have been so unimportant in the opinion of some writers that not only is their mention quite omitted, but they are wanting in the figures employed ostensibly to illustrate the alar-vein system so essential to notice in a newly-described generic or specific form.

The species upon which new generic names have not been conferred, added to those delineated by Walker, belong to the following genera:—*Macrocera* (3), *Ceroplatus* (1), *Platyura* (8), *Sciophila* (1), *Leia* (1), *Trichonta* (2), and *Mycetophila* (2), though, as can be readily seen, it is more than probable that those of Walker will be extremely difficult to determine from his poor descriptions; as to the localities of the latter, three are stated to be from "Van Diemen's Land" and the fourth from the very vague locality "New Holland."

I think that an investigation of the genital organs of the male would result in very interesting and valuable additions to our knowledge of the Mycetophilidæ, and the characters and structure of these would perhaps prove useful in defining the genera.

There seems to be a great variety in the structure of the holding-forceps of the male; in some genera it is a very complex piece of mechanism provided with numerous spines, claws and setæ, and often cannot fail to elicit wonder from the observer as to what are the uses of the various parts. Amongst the small number of Australian Mycetophilidæ I have studied, I have only been able to give the male genitalia a cursory examination, but in two instances I have figured them.

Winnertz in his Monograph of the Mycetophilidæ draws a summary of the European genera known to him, and in the following pages I have given a translation of this valuable portion of his work, altered to suit the interpretation of the alar-vein system which I adopt; and I have introduced amongst the genera, sketches of as many of the genera established since the work of Winnertz, including those characterized from all parts of the world, as I have been able to make out. My reason for taking this trouble is in order to make easier the recognition of hitherto defined genera, species of any of which, it is not improbable, may be yet discovered in Australia. It is more than possible that there are some established genera of which I have not seen even the names, while there are also others of which I have been able only to give the characteristics as they are presented by the authors who drew them up; in some instances these latter are insufficient for me to be able to divine their proper place amongst the other genera, and these I have for the present set aside by themselves.

CLASSIFICATION OF THE MYCETOPHILIDÆ.

The Mycetophilidæ are so well-defined, and the systematic position of the genera has been so well settled by the labours of Winnertz, that in the present state of our knowledge of the family no attempt to improve upon the work of this author has been either called for or attempted. I shall not essay an historical account of the classification of the family, through inability to improve upon that already extant in Winnertz's invaluable monograph; the great knowledge of that author has enabled him to ably pronounce

upon the definitions of this family given by Meigen, Macquart, Zetterstedt, and Haliday, and to fully estimate the validity of the genera either introduced or established by them. Besides giving due consideration to the arbitrary characteristics employed in the formation of an artificial system, Winnertz has not failed to take into account the young stages, manners of life, and metamorphoses as far as available information would allow, with the view to uniting the genera in natural groups. In commenting upon the work of Macquart, Zetterstedt, and Haliday, he points out that these authors have not only placed insects together which lack agreement in their external structure, but moreover have added to Meigen's group (*Fungicolæ*) insects which even disagree in their metamorphoses and manners of life.

Winnertz deals exclusively with the European *Mycetophilidæ*, accepts eighteen genera of previous writers, and proposes twenty-four new ones. These are first divided into three sections, and again distributed amongst seven sub-sections. All the ultra-European genera known to me up to the present, added to the European genera characterized since Winnertz wrote his monograph, may be conveniently ranked in one or other of the existing sub-sections. His arrangement of the genera, subject to some modifications in the interpretation of the venation of the wings and in the bestowal of an almost entirely different terminology, stands practically as follows:—

DIVISION INTO SECTIONS.

SECTION I.—Second longitudinal vein arising from the fourth longitudinal vein, at the middle of it, or more or less before the middle of it. Marginal cross-vein elongated, very obliquely situated. Inner marginal cell dilated. Anterior branch of the second longitudinal vein seldom missing (in *Diadocidia* only). Anterior branch of the fourth longitudinal vein issuing from the base of the second longitudinal vein. Fifth longitudinal vein generally perfect. Ocelli on the front.

SECTION II.—Second longitudinal vein arising from the fourth longitudinal vein near the root of the wing. Marginal cross-vein

not elongated. Inner marginal cell not dilated. Anterior branch of the second longitudinal vein always present, very small, situated very near the marginal cross-vein, consequently the marginal cell is very small. Anterior branch of the fourth longitudinal vein issuing from the fourth longitudinal vein beyond, at, or before the middle of it, rarely near the root of it. Fifth longitudinal vein incomplete. Three ocelli on the front.

SECTION III.—Second longitudinal vein, marginal cross-vein, fifth longitudinal vein and inner marginal cell as in the second section. Anterior branch of the second longitudinal vein always missing, therefore only two sub-marginal cells. Anterior branch of the fourth longitudinal vein arising from the fourth longitudinal vein beyond, at, or before the middle of it, rarely missing, more rarely still the anterior branch of the third longitudinal vein missing. Ocelli three or only two, namely:—

- A. *Three on the front.*
- B. *Three, one on the inner margin of each of the compound eyes, the third always very small, situated in the middle of the anterior margin of the front.*
- C. *Two, one on the inner margin of each of the compound eyes.*

SUMMARY OF THE GENERA.*

SECTION I.

Sub-Section I.—DIADOCIDINÆ.

Genus 1. DIADOCIDIA, Ruthe.

Anterior branch of the second longitudinal vein missing. Anterior branch of the fourth longitudinal vein and the third longitudinal vein issuing from the second longitudinal vein. Fifth longitudinal vein perfect. Inner marginal cell moderately dilated, very short. Surface of the wings hairy.

* Omitting *Eudicrana*, *Allocotocera*, *Monoclona* and *Parezechia*, known to me by name only

Sub-Section II —MYCETOBINÆ.

Anterior branch of the second longitudinal vein large, ending in the costa, and forming with the second longitudinal a fork having its base at or beyond the marginal cross-vein. Anterior branch of the fourth longitudinal vein and the third longitudinal vein issuing from the second longitudinal vein. Fifth longitudinal vein perfect. Inner marginal cell large. Surface of the wing hairy, or only microscopically pubescent.

Genus 2. MYCETOBIA, Meig.

1. Anterior branch of the second longitudinal vein and second longitudinal vein forming a fork having its base at the marginal cross-vein. Surface of the wings microscopically pubescent.

Genus 3. DITOMYIA, Winn.

2. Anterior branch of the second longitudinal vein and second longitudinal vein forming a fork having its base beyond the marginal cross-vein. Surface of the wings hairy.
 - a. Base of the fork lying before the base of the third sub-marginal cell. Costal vein extending beyond the tip of the second longitudinal vein.

Genus 4. PLESIASTINA, Winn.

- b. Base of the fork lying beyond the base of the third sub-marginal cell. Tip of the costal vein uniting with the tip of the second longitudinal vein.

Sub-Section III.—BOLITOPHILINÆ.

Genus 5. BOLITOPHILA, Meig.

Anterior branch of the second longitudinal vein short, lying almost vertically to the costa or to the first longitudinal vein, and forming with the second longitudinal vein a fork with a long petiole. From the second longitudinal vein, bent angularly in the vicinity of the root, issue the anterior branch of the fourth longitudinal vein and the third longitudinal vein. Fifth longi-

tudinal vein perfect. Inner marginal cell large, moderately dilated. Surface of the wing microscopically pubescent. Antennæ very long, setiform.

Sub-Section IV.—MACROCERINÆ.

Genus 6. MACROCERA, Meig.

Anterior branch of the second longitudinal vein small, lying in an oblique position, going into the costa, and forming a fork with a long petiole with the strongly curved second longitudinal. Anterior branch of the fourth longitudinal vein arising from the second longitudinal vein near the base, the third longitudinal vein arising from the same vein, a little anterior to the anterior branch of the fourth longitudinal. Fifth longitudinal vein perfect. Inner marginal cell small, moderately dilated. Surface of the wing microscopically pubescent, rarely more hairy. Antennæ very long, filiform.

Sub-section V.—CEROPLATINÆ.

Anterior branch of the second longitudinal vein small, joining the costa or the first longitudinal, forming a fork with a long petiole. Anterior branch of the fourth longitudinal vein arising nearer the base of the latter. Fifth longitudinal vein complete or incomplete. Inner marginal cell short, moderately dilated. Surface of the wing microscopically pubescent.

A. *Proboscis not lengthened.*

Genus 7. CEROPLATUS, Bosc.

Antennæ broadly flattened. Palpi not incurved. Legs long and slender. Auxiliary vein reaching the costa before the origin of the third longitudinal vein.

Genus 8. HETEROPTERNA, gen.nov.

Antennæ and palpi as in *Ceroplatus*. Legs short, the tibiæ and tarsi of the hind pair enormously thickened. Auxiliary vein reaching the costa beyond the origin of the third longitudinal vein.

Genus 9. *PLATYURA*, Meig.

Antennæ not broadly flattened, somewhat compressed, 2- + 14-jointed. Palpi incurved. Auxiliary vein usually united to the first longitudinal vein by the sub-costal cross-vein; anterior branch of the second longitudinal vein short, ending either in the first longitudinal or the costal vein; third sub-marginal cell with a very short petiole.

Genus 10. *PSEUDOPLATYURA*, gen.nov.

Antennæ almost cylindrical, 2- + 13-jointed. Palpi incurved. Auxiliary vein not united to the first longitudinal vein by a sub-costal cross-vein and joining the costa before the tip of the marginal cross-vein; anterior branch of the second longitudinal vein rather long, taking its origin considerably before the tip of the first longitudinal vein, but ending in the costal vein.

B. Proboscis lengthened.

Genus 11. *ANTRIADOPHILA*, gen.nov.

Antennæ very little compressed, 2- + 12-jointed. Palpi incurved. Auxiliary vein not united to the first longitudinal vein by a sub-costal cross-vein, joining the costa immediately before the tip of the marginal cross-vein; anterior branch of the second longitudinal vein short, joining the costa; petiole of the third sub-marginal cell about $\frac{1}{3}$ the length of the anterior branch of the fork.

Genus 12. *ASINDULUM*, Latr.

Antennæ cylindrical, somewhat compressed, 2- + 15-jointed. Palpi incurved. Wings as in *Platyura*. Abdomen with eight segments.

SECTION II.

Sub-section VI.—*SCIOPHILINÆ*.Genus 13. *SCIOPHILA*, Meig.

Tip of the costal vein uniting with the tip of the second longitudinal vein at the apex of the wing. Base of the second posterior cell nearer to the root of the wing than the base of the third sub-marginal cell. Auxiliary sometimes complete and

terminating in the costa above the marginal cell, and sometimes incomplete. Surface of the wing microscopically pubescent. Intermediate coxæ of the ♂ sometimes with an upward bent spine.

Genus 14. NEOEMPHERIA, O. Sacken.

Costal vein extending beyond the tip of the second longitudinal vein, but not reaching as far as the apex of the wing. Marginal cell sometimes very much lengthened. All the rest as in *Sciophila*, only that the auxiliary vein is always unshortened and reaches the costa sometimes beyond the marginal cell. No spine on the intermediate coxæ of the ♂.

Genus 15. POLYLEPTA, Winn.

Costal and auxiliary veins as in *Neoempheria*. Inner marginal somewhat shortened. Base of the second posterior cell nearer the base of the third sub-marginal cell than in the preceding, and the branches of the third longitudinal vein longer. Surface of the wing microscopically pubescent. Abdomen long, thin, cylindrical.

Genus 16. PARATINIA, Mik.

Costal vein extending beyond the tip of the second longitudinal vein, nearly reaching the apex of the wing. Auxiliary vein joining the costa almost inappreciably beyond the base of the marginal cell. Sub-costal cross-vein situated a little beyond the middle of the inner marginal cell and before the base of the third longitudinal vein. Marginal cell trapezoidal, very lengthened. Anterior branch of the fork of the third longitudinal vein twice the length of the petiole. Base of the second posterior cell lying considerably before the base of the third sub-marginal cell. Wings broad, cuneiformly narrowed towards the base, distinctly hairy. Fifth longitudinal vein incomplete. Abdomen of the ♂ seven-segmented, long and very slender.

Genus 17. HOMASPIS, gen. nov.

Costal vein extending a little beyond the tip of the second longitudinal vein, nearly to the apex of the wing. Auxiliary vein joining the costa over the apex of the marginal cell. Sub-

costal cross-vein situated a little before the apex of the inner marginal cell. Marginal cell very small, nearly square. Third longitudinal fork almost sessile. Second posterior cell small, its base situated almost under the middle of the third sub-marginal cell. Fifth longitudinal vein incomplete. Surface of the wings microscopically pubescent. Abdomen of the ♂ with seven segments.

Genus 18. *LASIOSOMA*, Winn.

Costal vein extending far beyond the tip of the second longitudinal vein, but not as far as the apex of the wing. Auxiliary vein terminating in the costa far beyond the small marginal cell. Fork of the third longitudinal vein long, sessile, or its petiole very short. Base of the second posterior cell situated far beyond the base of the third sub-marginal cell. Inner marginal cell short. Surface of the wing more or less distinctly pubescent.

Genus 19. *EMPALIA*, Winn.

Costal vein as in *Lasiosoma*. Auxiliary vein ending in the costa over the greatly shortened marginal cell. Fork of the third longitudinal vein with a moderately long petiole. Base of the second posterior cell nearer the root of the wing than the base of the third sub-marginal cell. Surface of the wing microscopically pubescent.

Genus 20. *APOLEPHTHISA*, Grz.

Costal vein as in *Empalia*. Auxiliary vein ending in the costa before the middle of the marginal cell; without sub-costal cross-vein. Petiole of the third sub-marginal cell about one-third the length of the fork. Marginal cell twice as long as broad. Base of the second posterior cell situated before the base of the third sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with seven segments.

Genus 21. *TETRAGONEURA*, Winn.

Costal vein as in the two preceding genera. Auxiliary vein small, bent posteriorly, ending in the first longitudinal vein far before the marginal cell, or shortened to a tooth. The marginal

cell far beyond the middle of the first longitudinal vein. Inner marginal cell much lengthened. Fork of the third longitudinal vein with a moderately long petiole. Base of the second posterior cell lying before the base of the third sub-marginal cell, with *T. hirta* (a European species) situated far under the base of the inner marginal cell. Surface of the wing microscopically pubescent.

SECTION III.

Sub-section VII.—MYCETOPHILINÆ.

A. *Three ocelli on the front.*

Genus 22. SYNTEMNA, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein large, broken off at the sub-costal cross-vein. Basal portion of the second longitudinal vein and the marginal cross-vein equally long. Inner marginal cell short, extending somewhat beyond the root of the third longitudinal vein. Fork of the third longitudinal vein with a tolerably long petiole. Base of the second posterior cell situated before the base of the second sub-marginal cell. Surface of the wing hairy. Abdomen with seven segments.

Genus 23. LEPTOMORPHUS, Curt.

Costal vein scarcely extending beyond the tip of the second longitudinal vein. Auxiliary vein large, ending in the costa almost at the middle of the anterior border, united to the first longitudinal vein by the sub-costal cross-vein, which latter stands a little before the apex. The basal portion of the second longitudinal vein about double the length of the marginal cross-vein. Inner marginal cell short, extending a little beyond the root of the third longitudinal vein. Fork of the third longitudinal vein with a moderately long petiole. Base of the second posterior cell lying almost under the root of the second longitudinal vein. Surface of the wing apparently with a moderately distinct pubescence. Abdomen with seven segments.

Genus 24. *ANACLINIA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein large, ending in the costa a little before the middle of the anterior border, united to the first longitudinal vein by the sub-costal cross-vein which is situated before the middle. Basal portion of the second longitudinal vein and the marginal cross-vein equally long. Anterior branch of the third longitudinal vein incomplete, not connected with the third longitudinal vein. Inner marginal cell short, extending a little beyond the root of the third longitudinal vein. Base of the second posterior cell situated beyond the root of the second longitudinal vein. Surface of the wing distinctly microscopically pubescent. Abdomen with seven segments.

Genus 25. *BOLETINA*, Staeger.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein very large, terminating in the costa at the middle or a little before the middle of the anterior margin, and united to the first longitudinal vein by the sub-costal cross-vein. Sub-costal cross-vein rarely missing (in the European species *B. dispar*). Basal portion of the second longitudinal vein $1\frac{1}{2}$ to twice the length of the marginal cross-vein. Inner marginal cell short, its apex lying before the base of the second sub-marginal cell. Fork of the third longitudinal vein long, its petiole short. Base of the second posterior cell situated before the base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with seven segments.

Genus 26. *GNORISTE*, Meig.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein and sub-costal cross-vein as in *Boletina*. Inner marginal cell long, its apex situated over the base of the second sub-marginal cell. Fork of the third longitudinal vein long, its petiole very short. Base of the second posterior cell before the

base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with seven segments. Proboscis prolonged in the shape of a beak.

Genus 27. *PHTHINIA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein and transverse shoulder vein as in *Boletina*. Inner marginal cell lengthened, its apex lying over the base of the second sub-marginal cell. Fork of the third longitudinal vein long, its petiole very short. Second posterior cell very short, widely open, its base situated beyond the base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen long, slender, with seven segments. Antennæ long, filiform.

Genus. 28 *NEOGLAPHYROPTERA*, O. Sacken.

Tip of the costal vein uniting with the tip of the second longitudinal vein much before the apex of the wing. Auxiliary vein moderately large, terminating in the costa. Sub-costal cross-vein approaching the tip of the auxiliary vein. Marginal cross-vein approaching the tip of the first longitudinal vein, consequently the inner marginal cell is very long, its apex lying beyond the base of the second sub-marginal cell and beyond the middle of the wing. Fork of the third longitudinal vein long, its petiole tolerably short. Base of the second posterior cell situated considerably before the base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with seven segments.

Genus 29. *ACRODICRANIA*, gen.nov.

Costal vein extending much beyond the tip of the second longitudinal vein. Auxiliary vein joining the costa almost over or somewhat before the origin of the third longitudinal vein, united to the first longitudinal by the sub-costal cross-vein. Marginal cross-vein almost opposite the middle of the wing. Fork of the third longitudinal vein about twice the length of its petiole; tip of the anterior branch joining the margin as much above the apex of the wing as that of the posterior branch does

below it. Anterior branch of the fourth longitudinal vein detached at the base. Base of the second posterior cell situated a little before the origin of the third longitudinal vein. Wing microscopically pubescent. Abdomen with eight segments.

Genus 30. *LEIA*, Meigen.

Costal vein extending considerably beyond the tip of the second longitudinal vein. Auxiliary vein large, ending in the costa. Sub-costal cross-vein missing. Marginal cross-vein situated far beyond the middle of the first longitudinal vein. Inner marginal cell much lengthened, its apex situated about over the middle of the wing. Anterior branch of the third longitudinal vein short, fourth longitudinal vein long, the root of both missing. Base of the second posterior cell lying about under the middle of the inner marginal cell. Surface of the wing microscopically pubescent. Abdomen with six segments.

Genus 31. *ATELEIA*, gen.nov.

Costal vein extending far beyond the tip of the second longitudinal vein. Auxiliary vein joining the costa much before the origin of the third longitudinal vein. Sub-costal cross-vein situated about the middle of the auxiliary vein. Anterior branches of the third and fourth longitudinal veins both detached. Marginal cross-vein situated near the tip of the first longitudinal vein, consequently the inner marginal cell very long. Base of the second posterior cell situated much before the origin of the third longitudinal vein. Fifth longitudinal vein distinct. Surface of the wing microscopically pubescent. Abdomen with six segments.

Genus 32. *COELOSIA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein large, ending in the costa. Sub-costal cross-vein missing. Inner marginal cell somewhat lengthened, its apex lying almost over the base of the second sub-marginal cell. Fork of the third longitudinal vein long, its petiole somewhat

short. Second posterior cell small and wide open, its base situated far beyond the base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with six segments.

Genus 33. *ACNEMIA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein large, terminating in the costa, and united to the first longitudinal vein by the sub-costal cross-vein. Inner marginal cell short. Fork of the third longitudinal vein long, its petiole short. Anterior branch of the fourth longitudinal vein missing. Surface of the wing microscopically pubescent. Abdomen with six segments.

Genus 34. *TRIZYGIA*, gen.nov.

Costal vein extending considerably beyond the tip of the second longitudinal vein. Auxiliary vein ending in the costa beyond the marginal cross-vein, united to the first longitudinal vein by the sub-costal cross-vein. Marginal cross-vein situated considerably before the middle of the first longitudinal vein. Third longitudinal vein without an anterior branch. Fourth longitudinal vein a little arcuated, the anterior branch detached, appearing as a short piece of a vein, joining the margin. Fifth longitudinal vein missing. Wing microscopically pubescent, the hairs of distinctly two lengths. Abdomen with six segments.

Genus 35. *APHELOMERA*, gen.nov.

Costal vein extending far beyond the tip of the second longitudinal vein, stopping a little before the apex of the wing. Auxiliary vein joining the costa a short distance before the marginal cross-vein; no sub-costal cross-vein. Marginal cross-vein situated very much before the middle of the first longitudinal vein. Third longitudinal vein detached from the second longitudinal, starting in the wing-disk considerably beyond the marginal cross-vein; no anterior branch. Anterior branch of the fourth longitudinal vein quite detached, appearing as a short piece

of a vein, joining the margin. Fifth longitudinal vein very rudimentary. Wing microscopically pubescent. Abdomen with six segments.

Genus 36. AZANA, Walk.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein a short rudiment. Inner marginal cell very narrow, almost linear. Anterior branch of the third longitudinal vein, anterior branch of the fourth longitudinal vein, and the fifth longitudinal vein missing. Surface of the wing microscopically pubescent. Abdomen with six segments.

Genus 37. PARASTEMMA, Grz.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein very short, terminating in the first longitudinal vein; sub-costal cross-vein missing. Inner marginal cell lengthened, its apex, however, not reaching as far as the base of the second sub-marginal cell. Petiole of the second sub-marginal cell moderately long. Base of the second posterior cell situated before the base of the second sub-marginal cell. Surface of the wing microscopically pubescent. Abdomen with seven segments.

B. Three ocelli, one on the inner border of each of the compound eyes, the third one situated in the middle of the anterior border of the front.

Sub-costal cross-vein missing.

Surface of the wing microscopically pubescent.

Abdomen of the ♂ with six segments.

Genus 38. DOCOSIA, Winn.

Costal vein extending far beyond the tip of the second longitudinal vein. Auxiliary vein moderately long, bent posteriorly, ending in the first longitudinal vein, or bent anteriorly without reaching the costa. Apex of the inner marginal cell lying before the base of the second sub-marginal cell or somewhat beyond it. Fork of the third longitudinal vein long, its petiole short. Base of the second posterior cell lying immediately before the base of the second sub-marginal cell.

Genus 39. BRACHYPEZA, Winn.

Tip of the costal vein uniting with the tip of the second longitudinal vein before the apex of the wing. Auxiliary vein short, bent posteriorly, ending in the first longitudinal vein. Inner marginal cell long, its apex lying over the base of the second sub-marginal cell. Fork of the third longitudinal vein with a short petiole. Second posterior cell extended, its base lying under the middle of the inner marginal cell, and much before the base of the second sub-marginal cell. Fifth longitudinal vein short and delicate. Flagellar joints of the antennæ annular, compressed, very compact. Legs strong, all the femora, and the fore-legs short; tibiæ almost claviform.

Genus 40. RYMOSIA, Winn.

Tips of the costal and second longitudinal veins uniting at a distance before the apex of the wing. Auxiliary vein very short, ending in the first longitudinal vein, or short and broken off. Inner marginal cell long, its apex lying above or somewhat beyond the base of the second sub-marginal cell. Petiole of the third longitudinal fork very short. Second posterior cell extended, narrowing from its middle to the base, the base lying before the root of the second longitudinal vein, almost under the middle of the inner marginal cell. Flagellar joints of the antennæ cylindrical. Legs long and slender.

Genus 41. ALLODIA, Winn.

Costal and second longitudinal veins as in *Rymosia*. Auxiliary vein short, bent posteriorly to the first longitudinal vein, or being only like a short tooth. Apex of the inner marginal cell before the base of the second sub-marginal cell. Petiole of the third longitudinal fork short. Second posterior cell not extended or only slightly, its base lying under the petiole of the fork of the third longitudinal vein. Fifth longitudinal vein short, disappearing before the base of the second posterior cell. Legs slender.

Genus 42. BRACHYCAMPYA, Winn.

Wing as in *Allodia*. Auxiliary vein always very small, bent towards the first longitudinal vein. Second posterior cell more or less extended, its base lying much before the base of the second sub-marginal cell, sometimes before the root of the second longitudinal vein. Fifth longitudinal vein missing. Legs slender.

Genus 43. TRICHONTA, Winn.

Costal vein extending almost imperceptibly beyond the tip of the second longitudinal vein. Auxiliary vein large, running parallel with the first longitudinal vein, in which it ends bent downwards. Apex of the inner marginal cell lying over the short petiole of the fork of the third longitudinal; the base of the second posterior cell, which is not extended, lies sometimes before, sometimes under, sometimes beyond the base of the second sub-marginal cell. Fifth longitudinal vein delicate, very short or only rudimentary. Legs slender.

Genus 44. ANATELLA, Winn.

Costal vein extending very much beyond the tip of the second longitudinal vein, almost to the apex of the wing. Auxiliary vein very small, bent posteriorly. Apex of the inner marginal cell lying above the petiole of the fork of the third longitudinal; the base of the second posterior cell, which is not extended, lies sometimes before, sometimes under, and sometimes beyond the base of the second sub-marginal cell. Fifth longitudinal vein delicate, disappearing before the base of the second posterior cell. Legs long, the tibial spurs unequal in length.

Genus 45. PHERONIA, Winn.

Costal vein sometimes extending almost imperceptibly beyond the tip of the second longitudinal vein. Auxiliary vein incomplete, bent anteriorly, not reaching the costa, rarely going completely into the costa. Apex of the inner marginal cell lying over the short petiole of the fork of the third longitudinal vein. Second

posterior cell very small, wide open, its base situated far beyond the base of the second sub-marginal cell. Fifth longitudinal vein rudimentary, scarcely perceptible. Legs slender.

Genus 46. *EXECHIA*, Winn.

Tips of the costal and second longitudinal veins uniting at a greater or less distance from the apex of the wing. Auxiliary vein short, bent posteriorly, ending in the first longitudinal vein, or broken off, forming only a tooth. Base of the inner marginal cell lying over or beyond the base of the second sub-marginal cell; the base of the second posterior cell more or less beyond the base of the second sub-marginal cell. Petiole of the third longitudinal fork short. Fifth longitudinal vein broken off under or before the base of the second posterior cell, or disappearing. Sixth longitudinal vein large. Legs very slender.

Genus 47. *ZYGOMYIA*, Winn.

Tips of the costal and second longitudinal veins uniting far before the apex of the wing. Auxiliary vein incomplete, bent anteriorly, gradually disappearing or only forming a tooth. Apex of the inner marginal cell not situated beyond the base of the second sub-marginal cell. Petiole of the fork of the third longitudinal vein short. Anterior branch of the fourth longitudinal vein wanting. Fifth longitudinal vein incomplete. Sixth longitudinal vein in most cases large.

Genus 48. *SCEPTONIA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Costal, first longitudinal, and second longitudinal veins approaching one another, running almost parallel. Petiole of the fork of the third longitudinal short. Apex of the inner marginal cell lying over the petiole of the third longitudinal fork. Anterior branch of the fourth longitudinal vein, and the fifth longitudinal vein missing. Sixth longitudinal vein very large.

Genus 49. *EPICYPTA*, Winn.

Costal vein extending beyond the tip of the second longitudinal vein. Auxiliary vein incomplete, bent anteriorly. Petiole of the fork of the third longitudinal short. Apex of the inner marginal cell lying over the base of the second sub-marginal cell. Second sub-marginal cell and the second posterior cell stretched, almost equally long, the base of the latter lying under or before the base of the former. Fifth longitudinal vein rudimentary or entirely missing. Sixth longitudinal vein very large.

Genus 50. *MYCOTHERA*, Winn.

Tips of the costal and second longitudinal veins uniting at some distance before the apex of the wing. Auxiliary vein incomplete, bent anteriorly. Petiole of the third longitudinal fork short. Apex of the inner marginal cell lying over the base of the second sub-marginal cell. Branches of the fourth longitudinal vein a little inclined towards one another at the tips. Fifth longitudinal vein incomplete. Sixth longitudinal vein stout.

C. Two ocelli, one on the inner border of each of the compound eyes.

Surface of the wing microscopically pubescent.

Costal vein not extending beyond the tip of the second longitudinal vein.

Sub-costal cross-vein missing.

Genus 51. *MYCETOPHILA*, Meig.

Auxiliary vein incomplete, bent anteriorly. Apex of the inner marginal cell lying over the base of the second sub-marginal cell. Fork of the third longitudinal vein with a very short petiole or almost sessile. Base of the second posterior cell before, under or a little beyond the base of the second sub-marginal cell. Branches of the fourth longitudinal fork inclined to one another towards their tips. Fifth longitudinal vein incomplete, broken off before the base of the second posterior cell or disappearing. Abdomen of the ♂ with six segments.

Genus 52. BRACHYDICRANIA, gen.nov.

Auxiliary vein incomplete, very short, bent posteriorly. Apex of the inner marginal cell lying over the base of the second sub-marginal cell. Fork of the third longitudinal vein with a very short petiole. Second posterior cell small, its base situated far beyond the base of the second sub-marginal cell. Branches of the fourth longitudinal fork divergent. Fifth longitudinal vein incomplete, long, ending just before the base of the second posterior cell. Sixth longitudinal vein large. Abdomen of the ♂ with six segments.

Genus 53. DYNATOSOMA, Winn.

Auxiliary vein bent posteriorly, ending in the first longitudinal vein. Apex of the inner marginal cell immediately before or over the base of the second sub-marginal cell. Petiole of the fork of the third longitudinal very short. Base of the second posterior cell under or beyond the base of the second sub-marginal cell. Fifth longitudinal vein very stout, long and broken off under the second posterior cell. Abdomen of the ♂ with six segments.

Genus 54. CORDYLA, Meig.

Auxiliary vein as a short tooth, bent posteriorly. Apex of the inner marginal cell lying over the fore part of the petiole of the third longitudinal fork; the petiole somewhat long. Second sub-marginal cell narrow. Third longitudinal vein frequently disappearing before the margin. Second posterior cell large, wide open, the base before, under or beyond the base of the second sub-marginal cell. Fifth longitudinal vein incomplete. Sixth longitudinal vein large. Abdomen with seven segments.

INCERTÆ SEDIS.

Genus 55. CNEPHÆOPHILA, Phil.

“Ocelli duo. Antennæ caput cum thorace superantes, 16-articulatæ; articulis duobus primis crassis reliquis cylindricis. Alæ cellula basilari unica brevi; marginalibus duabus, prima

brevissima sub-quadrata, secunda longissima arcuata, apicem alæ formante; sub-marginali longa, arcuata, posticis tribus (secunda cum cellula basilari secunda confusa). Tibiæ apice calcaratæ, cæterum inermes."

Genus 56. *PLATYROPTILON*, Westw.

"Sub-genus novum *Platyuris* typicis affine, attamen antennis flabellatis distinctum. Caput mediocre, haud rostratum, oculis maximis subtus basin antennarum conjunctis: ocellos 2 magnos approximatos tantum vidi. Os indistinctum. Antennæ breves, 12-articulatæ, articulis brevibus, 3-11 singulatim ramum longum pilosum emittentibus, 12mo elongato. Alæ absque cellula parva sub-quadrata, vena 1ma longitudinali ante apicem ramulum parvum obliquum, ad costam extensum, emittente. Pedes satis graciles et elongati, posticorum tibiis calcaribus duobus acutis armatis, articulo 1mo longo et reliquis parum crassiori. Abdomen elongatum gracile."

Genus 57. *DIOMONUS*, Walk.

"Resembles *Platyura* as regards its antennæ, while its wings are those of *Leptomorphus*, except that the areola under the anterior margin of the wing, absent in that genus, is present in this."

Obs.—From the above it appears that *Diomonus* belongs to the Sciophilinæ, and should probably come near *Empheria*; Walker in his "Notes on Diptera" puts this genus amongst the Ceratoplinæ (Ceroplatinae), between the genera *Platyroptilon* and *Asindulum*, evidently regarding the structure of the antennæ of more importance than the venation of the wings.

Genus 58. *PSEUDOSCIARA*, Sch.

"Head roundish. Eyes reniform. Front broad. Ocelli two. Antennæ 2-+10-jointed, the flagellar joints longer than broad, cylindrical, finely haired. Palpi incurved, four-jointed, thick at the base, the last two joints very long and slender. Thorax moderately arched, without a transverse suture. Scutellum small.

Abdomen cylindrical, slender, with short close hair, the ♂ genital closed, the end of the abdomen club-shaped and thickened. Legs tolerably long; coxæ tolerably robust, elongated; femora shorter; tarsi longer than the tibiæ; the fore-femora as long, or scarcely as long, as the coxæ. Tibial spurs large. Wings microscopically pubescent, the anterior border with close short hairs; posterior border ciliated. Discoidal vein distinctly haired; mediastinal vein rudimentary, very short, gradually disappearing; subcostal vein joining the costa far beyond the middle of the wing; cubital vein issuing in a steep way out of the sub-costal vein, nearer to the tip of the latter; the small cross-vein running in the same direction as the cubital vein, appearing as a continuation of the latter; the portion in front of the point where the discoidal vein branches off to the cubital vein 6-8 times as long as the steep basal portion of the cubital vein; discoidal vein branching off beyond the tip of the sub-costal vein, the petiole much longer than the fork, the branches widely separated, the anterior somewhat arched. Postical vein branching far before the middle of the wing, the fork small at the base, then suddenly widened."

List of the Genera introduced into the Mycetophilidæ since the *Tipula* of Linnæus, the synonyms, doubtful genera, those named only or insufficiently characterised, and genera now deposited in other families being put in italics:—

Ceroplatus, Bosc, Act. Soc. Hist. Nat. de Paris, I. p. 42, 1792.

Macrocera, Meigen, Illiger's Magazine, II. p. 261, 1803.

Mycetophila, Meig. l.c. p. 261.

Cordyla, Meig. l.c. p. 263.

Sciara, Meig. l.c. (type of the Sciaridæ).

Platyura, Meig. l.c. p. 264.

Asindulum, Latreille, Hist. Nat. des Crus. et des Ins. XIV. p. 290, 1804.

Molobrus, Latr. N. Dict. d'Hist. Nat. (syn. *Sciara*).

Campylomyza, Meig. System. Besch. I. p. 101, 1818 [now included in *Cecidomyidæ*, but Haliday (Ins. Brit. Dip. III. 6, 1851,) places it in *Mycetophilidæ*].

- Dixa*, Meig. l.c. p. 216 (now separate family, Dixidæ).
Bolitophila, Meig. l.c. p. 220.
Synapha, Meig. l.c. p. 227 (considered an abnormal form).
Mycetobia, Meig. l.c. p. 229.
Gnoriste, Meig. l.c. p. 243.
Sciophila, Meig. l.c. p. 245.
Leia, Meig. l.c. p. 253.
Lestremia, Macquart, Dipt. du Nord Fr. p. 173, 1826 (now belonging to Cecidomyidæ).
Zygoneura, Meig. System. Besch. VI. p. 304, 1830 (now included in Sciaridæ).
Leptomorphus, Curtis, Brit. Entom. VIII. p. 365, 1831.
Diadocidia, Ruthe, Isis, XI. p. 1210.
Catocha, Haliday, Ent. Mag. I. p. 156, 1833 (now included in Cecidomyidæ).
Anarete, Hal. l.c. (now included in Cecidomyidæ).
Brachypalpus, Macq. S. à B. I. p. 144, 1834 (Syn. Cordyla).
Macroneura, Macq. l.c. p. 146 (Syn. Diadocidia).
Chenesia, Macq. l.c. p. 151 [Syn. Orphnephila, Hal. (1830) now separate family, Orphnephilidæ).
Planetes, Walck. Ent. Mag. XII. 1835 (Syn. Sciara).
Messala, Curtis, Brit. Entom. XIII. p. 581, 1836 (Syn. Bolitophila).
Planetella, Westwood, Int. Mod. Cl. Ins. II. Generic synopsis, p. 126, 1840 (Syn. Sciara).
Pachyneura, Zetterstedt, Ins. Lapp. (now referred to Bibionidæ).
Boletina, Staeger, Kröjer's Tidsskr. III. p. 234.
Cecidogona, Loew, Stett. Ent. Zeit. V. p. 324, 1844 (now included in Cecidomyidæ).
Ditomyia, Winnertz, Stett. Ent. Zeit. VII. p. 15, 1846.
Macrorrhyncha, Winn. l.c. p. 17 (Syn. Asindulum).
Tetragoneura, Winn. l.c. p. 18.
Microsciara, Rondani, Nuove Ann. d. Sc. Nat. ser. 2, VI. p. 263.
Diomonus, Walker, List. Ins. Dipt. Brit. Mus. I. p. 87, 1848.

Symmerus, Walk. l.c. p. 88 (Syn. Plesiastina).

Platyroptilon, Westw. Trans. Ent. Soc. V. p. 231, 1849.

Sciobra, Loew, Bernstein fauna, p. 34, 1850.

Dianepsia, Loew, l.c.

Heterotrica, Loew, l.c.

Aclada, Loew, l.c. p. 35.

Epidapus, Hal. Ins. Brit. Dipt. I. p. 7, 1851 (now included in Sciaridæ).

Plesiastina, Winn. Stett. Ent. Zeit. XIII. p. 55, 1852.

Cerotelion, Rond. Prodr. Dipterol. Ital. I.

p. 191, 1856.

Mycomya, Rond. l.c. p. 194.

Fungina, Rond. l.c.

Lejomya, Rond. l.c. p. 195.

Mycetina, Rond. l.c.

Neuratelia, Rond. l.c.

Pietopalpus, Rond. l.c. p. 196.

Bolithobia, Rond. l.c.

Mycetomyza, Rond. l.c. p. 197.

Bolithomyza, Rond. l.c.

Yposatæa, Rond. l.c. p. 198.

Neurolyga, Rond. l.c. p. 199.

Azana, Walk. Ins. Brit. III. p. 26.

Agaromyia, Rond. Prodr. Dipterol. Ital. IV.

p. 12, 1861.

Mycosia, Rond. l.c.

Mycosetæa, Rond. l.c.

Mycetoica, Rond. l.c.

Empheria, Winn. V. z-b. G. Wien, XIII. p. 738, 1863 (Syn. Neoempheria).

Polylepta, Winn. l.c. p. 745.

Lasiosoma, Winn. l.c. p. 748.

Empalia, Winn. l.c. p. 762.

Syntemna, Winn. l.c. p. 767.

Anaclinia, Winn. l.c. p. 770.

Phthinia, Winn. l.c. p. 779.

Fossil forms found in amber. It appears that these genera have been named only.

Insufficiently characterized.

Insufficiently characterized.

- Glaphyrophtera*, Winn. l.c. p. 781 (syn. *Neoglaphyrophtera*).
Coelosia, Winn. l.c. 796.
Acnemia, Winn. l.c. p. 798.
Docosia, Winn. l.c. p. 802.
Brachypeza, Winn. l.c. p. 806.
Rymosia, Winn. l.c. p. 810.
Allodia, Winn. l.c. p. 826.
Brachycampta, Winn. l.c. p. 833.
Trichonta, Winn. l.c. p. 847.
Anatella, Winn. l.c. p. 854.
Phronia, Winn. l.c. p. 857.
Exechia, Winn. l.c. p. 879.
Zygomyia, Winn. l.c. p. 901.
Sceptonia, Winn. l.c. p. 907.
Epicypta, Winn. l.c. p. 909.
Mycothera, Winn. l.c. p. 913.
Dynatosoma, Winn. l.c. p. 947.
Geneja, Lioy, Atti. Ist. Ven. ser. 3, IX. p. 229, 1864 (Syn. *Macrocera*).
Cnephæophila, Philippi, V. z.-b. G. Wien, XV. p. 618, 1865.
Centrocnemis, Phil. l.c. p. 619 (Syn. *Pleasiastina*).
Agaricobia, Phil. l.c. p. 626 (Syn. *Acnemia*).
Pseudosciara, Schiner, V. z.-b. G. Wien, XVI. p. 930, 1866.
Trichosia, Winn. V. z.-b. G. Wien, XVIII. p. 173, 1867 (included in *Sciaridæ*).
Cratyna, Winn. l.c. p. 176 (included in *Sciaridæ*).
Corynoptera, Winn. l.c. p. 177 (included in *Sciaridæ*).
Bradysia, Winn. l.c. p. 180 (included in *Sciaridæ*).
Eudicrana, Loew, Berl. Ent. Zeit. IX. p. 141, 1869 (unknown to me).
Paratinia, Mik, V. z.-b. G. Wien, XXIV. p. 330, 1874.
Stægeria, Wulp, Tijdschr. Ent. XIX. p. XLIX. 1876 (Syn. *Monoclona*).
Neoempheria, O.Sacken, Catl. Dipt. N. America, 2nd ed. p. 9, 1878.
Neoglaphyrophtera, O.Sacken, l.c. p. 10.

Parastemma, Grzegorzek, Berl. Ent. Zeit. XXIX. p. 199, 1885.

Apolephthisa, Grz. l.c. p. 205.

Eurycera, Dziedzicki, Pam. Fizy. (Syn. Allocotocera).

Allocotocera, Mik, Wien. Ent. Zeit. V. p. 102, 1886 (unknown to me).

Monoclona, Mik, l.c. p. 279 (unknown to me).

Parexechia, Becher, Ins. von Jan Mayen, p. 62 (unknown to me).

Heteropterna, gen. nov. proposed in the present contribution, p. 1166.

Pseudoplatyura, l.c. p. 1180.

Antriadophila, l.c. p. 1183.

Homaspis, l.c. p. 1191.

Acrodicrania, l.c. p. 1194.

Ateleia, l.c. p. 1201.

Trizygia, l.c. p. 1204.

Aphelomera, l.c. p. 1206.

Brachydicrania, l.c. p. 1215.

CHARACTERS OF THE FAMILY.

Habits, &c.

The larvæ of the Mycetophilidæ are generally cylindrical, attenuated towards both extremities, soft, fleshy, smooth or a little wrinkled, moist, often viscous, more or less translucent, with twelve more or less clearly determinable segments in addition to the head. Stigmata placed one pair on the first segment of the thoracic region and one pair on each of the abdominal segments from the first to the seventh inclusive. Head horny. Short palpi and mandibles occasionally present, and also generally rudimentary antennæ. The above is a very general summary of the characters; a more precise one it is difficult to draw for the reason that the larvæ vary somewhat in form. Comparatively little appears to have been observed and recorded with regard to the first stages and life-histories of the Mycetophilidæ, and nothing whatever has yet been done in this direction in Australia.

The larvæ live on the juices of fungi and decaying vegetable matter; they have been found most abundantly in Europe in the rotten trunks of trees, and fungi belonging to the genera *Agaricus*, *Polyporus*, *Boletus*, *Hydnum*, and *Dædalea*, all of which, and many more, have their representatives in Australia. It does not seem that the larva of a given species is restricted in its food to a particular fungus; on the contrary, some may be discovered attacking fungi indiscriminately, while according to Winnertz, in dry years when the fungi do not grow, even those species which under ordinary circumstances must rely on fungi, are found in rotten trunks of trees. Many of the larvæ are gregarious in their habits. In order to prepare for the next metamorphosis, the majority go under ground, the rest pupate in the spot where they have hitherto resided. When fully grown they may or may not form a cocoon or puparium. Some prepare a more or less rough cocoon, rounded off at both ends, of which one end is broader than the other, and provided with a cap, which is easily pushed off by the perfect insect when ready to emerge; others make a tent-like web with which they invest themselves. Wahlberg, in 1849, published a long account of his observations on the life-history and metamorphoses of *Ceroplatus sesiioides*, and he found that both the larvæ and pupæ emitted a phosphorescent light. The cocoons do not shine, but permit the light of the pupæ to pass through them like a paper lantern.

In 1886 Mr. Meyrick communicated a note to the "Entomologists' Monthly Magazine" from Wellington (N.Z.), stating that he had observed a densely shaded creek near Auckland illuminated after dark with great numbers of larvæ, but insufficient opportunity prevented his investigating these creatures. Mr. Hudson, in the October number of this magazine for the same year, recorded further observations on these larvæ from Wellington. He says: "The insect inhabits irregular cavities in the bank, where it hangs suspended in a glutinous web, which also appears to envelope its body, large quantities of sticky mucus being periodically shot out of the mouth and formed into threads as required, but I have never seen anything like a net extended in front of

the insect. . . . At the back of this irregular chamber the larva constructs a small hole, into which it retreats with great rapidity when alarmed," &c., &c. In November (Ent. Mon. Mag. XXIII. p. 133) Osten Sacken, in a short note, asserts that Mr. Hudson's account about the luminous insect-larva from New Zealand leaves him little doubt that it belongs to the Mycetophilidæ. The description of the glutinous web, the rapid motions of the larvæ gliding upon it, and their retreat into holes when alarmed, showed a remarkable agreement with his observations on the larvæ of *Sciophila*, described in detail in his article, "Characters of the Larvæ of Mycetophilidæ," in the Proceedings Entom. Soc. Philad. 1862. He did not remember whether his *Sciophila* were shining or not. Osten Sacken then goes on to mention that Wahlberg had observed luminous larvæ of Mycetophilidæ.

Upon describing to Mr. Masters the habits of the larvæ of *Ceroplatus*, and showing him the above accounts and a plate containing figures of the metamorphoses and life-history of *Ceroplatus tipuloides* (Ann. des Sc. Nat. 2nd Ser. XI.), illustrating a monograph of the genus *Ceroplatus*, by Dufour, he at once remembered having seen larvæ whose habits and form corresponded to those of this genus; but although this is the right time of the year to look for specimens, neither Mr. Masters or myself, probably owing to the dryness of the season, could find any traces of them. The species which I have named *Ceroplatus Mastersi* occurs in the perfect state plentifully in November and December, and odd specimens even up to March.

Réaumur (Mem. p. s. à l'Hist. des Ins. Vol. V.) publishes a long account of his observations on the young stages of a species of *Ceroplatus*. The paper by Wahlberg containing the account of *Ceroplatus sesioides* is translated in the Stett. Ent. Zeit. 1849, pp. 120-123.

Perris gives some accounts of the life-histories of some species of *Mycetophila* in the early numbers of the "Annales de la

Société Entomologique de France;” and in a later volume (4th ser. Vol. X. p. 146), appears a lengthy contribution on the young stages of *Sciophila striata*, Meig., and the perfect insect.

Winnertz informs us that with all species having more than one generation in a year the pupa-state lasts seldom more than two or three weeks, but with those having only one yearly generation and lasting through the winter, this period lasts longer.

The perfect insects abound about Sydney, principally between the months of August and January inclusive; though stragglers may be caught throughout the year. A few days' rain succeeded by fine warm weather is sure to bring some out. Most if not all the species of which I have been able to obtain examples seem to prefer the shade during the day, beginning to take more extended flights towards the end of the afternoon when the sun is quickly losing power; many may be taken on windows towards evening. Dense bushes, dark gullies strewn with logs, and caves, all seem favourite resorts.

About 800 species of Mycetophilidæ are now known, representatives of many genera have been found almost throughout the world, and it is more than probable that the majority of generic forms will eventually be discovered to have an unlimited distribution. It is likely that most of the genera recorded as common to Europe and America also occur in Australia, and the little investigation to which these insects have been subjected, has conclusively shown that *Macrocera*, *Ceroplatus*, *Platyura*, *Sciophila*, *Leia*, *Trichonta*, and *Mycetophila*, so numerous represented in Europe, are also found here; all these, with I think the single exception of *Trichonta* (which, however, occurs in North America), have in most cases a large number of species in both North and South America; and although in America this group has received not nearly the amount of attention paid to it in Europe, we find from O.-Sacken's "Catalogue of the North American Diptera" published in 1878, that, notwithstanding this disadvantage, the therein recorded species are referable to about three-fourths of the known European genera, and it may reasonably be supposed that some of the old described species will, upon

further examination, be found to more properly occupy some of the numerous genera subsequently established by Winnertz, many of which latter are dismemberments of some of the older divisions, and are based upon characters liable to be overlooked by authors who do not think it worth while to give details of structure a careful and close scrutiny.

Dr. Schiner ("Novara-Expedition," 1868, p. 10) makes a few observations upon the geographical distribution of the group, and estimates the then known number of accepted genera at 48*, the species amounting to 694; in both these totals, however, he includes all those species now placed in the separate family Sciaridæ, while on the other hand he does not include his new genus *Pseudosciara* and five other new species (four of them *Sciara*) enumerated in his pages which follow. Deducting from the above the species attributed to the Sciaridæ, the genera would number 46 and the species about 450; and the only established genera, which up till that time were not known in Europe, were *Cnephæophila*, *Diomonus*, *Platyroptilon* and *Pseudosciara*, all created for American species. Since then (in 1869) Loew added his genus *Eudicrana* from North America, and this, with the above four, are still unknown in Europe or elsewhere out of America. To the European genera accepted by Schiner in 1868 six have since been added. In the present contribution nine new genera are named, but it is difficult to say that they may not have representatives elsewhere. As far as I can ascertain no Mycetophilidæ have been yet recorded from Africa, but no one of course for one moment entertains the thought that they may not occur there; some genera of the Cecidomyidæ and six of *Sciara* are known, which differ very little from the European forms, and possibly many, or may be most, of the generic forms of the Mycetophilidæ prevail there. *Mycetophila*, besides being recorded from Europe, North and South America and Australia, occurs, according to Prof. Hutton, in New Zealand; this author also describes an insect under the generic

* This does not include Loew's four fossil genera.

title *Platyura*, but judging from the note appended to his description the insect is evidently not *Platyura*. The four genera named by Loew, from fossil specimens discovered in amber, it appears are extinct.

Imago.

External structure.

The head is narrower than the thorax, round or oblong, flattened or flattened-hemispherical on the fore part, situated deep in the thorax. Front of both sexes broad. Eyes round or oval, frequently emarginate on the inner side or reniform, set with short hair. Ocelli three or only two; in the former case they are either disposed in a triangle, in a bent or sometimes a straight line on in the front, or two are situated, one at the inner border of each of the compound eyes, and the third placed in the middle of the anterior border of the front; in the other case always at the inner border of the compound eyes. Proboscis short, retired, rarely elongated or beak-shaped. Palpi three- or four-jointed, prominent, generally incurved; the first joint always very small. Antennæ generally arcuated, projecting forwards, straight or diverging sideways, 2-+10- to 2-+15-jointed; the joints of the scapus distinctly set-off, first one cylindrical or cyathiform, rarely cupuliform, second joint cupuliform or cyathiform, both usually setiferous at the apex; flagellar joints cylindrical, compressed-cylindrical, orbicular, or setiform, with a downy pubescence, seldom verticillate-setose. Thorax ovate, more or less arched; prothorax with short, close pubescence, sometimes with longer hair, frequently this is mingled with setiferous hair; lateral and posterior borders setiferous; metathorax highly arched or perpendicular; scutellum generally small, semi-circular, sometimes large, rounded-triangular, generally setiferous; no transverse suture. Halteres naked or with a minute pubescence. Abdomen six- or seven-segmented, rarely eight-segmented; cylindrical or compressed from the sides, narrower at the base; ♂ with a large or small anal joint and holding forceps; ♀ with an ovipositor provided with two terminal lamellæ; the hair, except in a few cases, short and lying

close. Legs sometimes long and slender, sometimes short and robust. Coxæ very strong and elongated. Femora broadly flattened, usually strong. Tibiæ spurred and with lateral spines, rarely without the latter; fore ones with a spur and a very small spine, or unarmed; hind ones with two spurs and one to four ranges of lateral spines on the outside, and generally with one range on the inner side; rarely are all the tibiæ unarmed. Tarsi long and slender, or short and strong, metatarsus frequently prickly. Wings ovate, longer or shorter than the abdomen, with a broad, rounded, or more or less cuneiformly narrowed base; distinctly haired or only microscopically pubescent; pellucid, more or less tinted with a pale shade of brown, sometimes hyaline, sometimes variegated; iridescent. Five or six longitudinal veins, the fifth generally, and the sixth always, rudimentary; three cross-veins, of which two—the humeral and marginal cross-veins—are always present, the sub-costal cross-vein being frequently missing; third and fourth longitudinal veins almost always, and the second longitudinal sometimes, forked. No discoidal cell. The costal vein, first longitudinal vein, and fourth longitudinal vein are always complete, and form the principal veins which issue from the root. The costal vein either extends quite to the apex of the wing or stops a short distance before it; the first longitudinal vein joins the costa; and the fourth longitudinal vein runs in a more or less long curve to the posterior margin of the wing. From the first longitudinal vein near or at its root branches off, between it and the costa, the auxiliary vein. The auxiliary vein is either long or short, bent upwards and going into the costa, bent downwards and running into the first longitudinal vein, disappearing gradually in its course in the sub-costal cell, or, lastly, forming only a tooth, which may be very short or somewhat lengthened, sometimes inclining downwards, and appearing to lean towards the first longitudinal vein; the auxiliary vein is connected by the humeral cross-vein near its base, with the costa, and frequently it is united to the first longitudinal vein by the sub-costal cross-vein. Second longitudinal vein issuing from the fourth longitudinal vein at or before its middle or near its root;

if it issues from the middle of the fourth longitudinal vein, or a little before its middle, it rises in a more or less oblique manner; when it issues remote from the middle, it is broken in an angle; if it issues from near the root of the fourth longitudinal vein, it rises with a light bend, and then runs in a slightly divergent line from the first longitudinal vein until it arrives almost to the middle of the wing-disk, and then it proceeds, bent upwards, to the marginal cross-vein; from the latter point it continues and joins the costa at or before the apex of the wing; in this latter combination the marginal cross-vein is very small, and is only rarely obliquely situated, and if there is an anterior branch to the second longitudinal vein this is far retired, and always very near the marginal cross-vein. The anterior branch of the fourth longitudinal vein issues rarely near the root of the second longitudinal vein. When the second longitudinal vein issues from the middle of the fourth longitudinal, it is at the base coalescent with the anterior branch of the fourth longitudinal vein, and the third longitudinal vein has its origin a little below, or above, the marginal cross-vein, and its fork lies higher up in the wing-disk; in this arrangement of the veins the second longitudinal vein is rarely simple, but usually sends out an anterior branch which runs into the costa, or into the first longitudinal vein; this branch may be short or long. When the second longitudinal vein issues from the base of the fourth longitudinal vein, the third longitudinal vein issues at the angle before the marginal cross-vein.

Rarely the anterior branch of the fourth longitudinal vein is missing, still more rarely the anterior branch of the third longitudinal vein; infrequently one of these branches is, or both are, detached at the base. Fifth longitudinal generally only rudimentary, sometimes entirely missing, but when complete running into the posterior margin; issuing from the root of the fourth longitudinal vein. Between the fifth longitudinal vein and the fourth longitudinal vein there is a longitudinal fold, beginning at the base of the fifth longitudinal vein and appearing like a vein

under and close to the fourth longitudinal vein, frequently continuing nearly to the wing margin. Sixth longitudinal vein rudimentary or entirely missing.

When the marginal cell is divided by an anterior branch of the second longitudinal vein the fresh cell thus formed is regarded as the first sub-marginal cell; otherwise, the cell between the second and third longitudinal veins (and the anterior branch of the latter) is the first, or perhaps the only, sub-marginal cell. If the anterior branch of the third longitudinal vein be missing, one sub-marginal cell disappears; and should the anterior branch of the fourth longitudinal vein be absent, the second posterior cell is merged into the first and takes its name. In the genera *Trizygia* and *Azana* all three anterior branches are missing, which leaves the wing with only one sub-marginal and one posterior cell; in the case of *Aphelomera* the third longitudinal itself is so detached from the second longitudinal vein as to really make one large posterior cell contained by the second and fourth longitudinal veins.

SECTION I.

Sub-section IV.—MACROCERINÆ.

Genus 6. MACROCERA, Meig.

Macrocera, Meigen, Illig. Mag. II. 1803, p. 261; Macquart, S. à B. Dipt. I. 1834, p. 127; Curtis, Brit. Ent. XIV. 1837, p. 637; Stæger, Kr. Tidsskr. 1840, p. 230; Zetterstedt, Dipt. Scand. X. p. 4060; Walker, Ins. Brit. Dipt. III. 1856, p. 69; Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 675; *Geneja*, Lioy, Atti. Ist. Ven. 3^a ser. t. IX, 1864, p. 229.

Head broad, oval, flattened on the fore part. Eyes oval, a little emarginate on the inner side above. Ocelli three, of unequal size, in a triangle on the front, the foremost one smaller. Palpi four-jointed, cylindrical, the first joint small, the following ones of equal length, or the fourth somewhat lengthened. Antennæ 2- + 14-jointed, very long, frequently much longer than the body, projecting forwards, arcuated; the first joint of the

scapus spheroidal, the second more cupuliform; the first flagellar joint cylindrical, the upper ones setiform, pubescent, a little setiferous on the under side; the last two joints densely covered with longer hair and setæ. Thorax oval, highly arched; scutellum small, almost semi-circular; metathorax highly arched. Abdomen flattened, almost cylindrical, in the ♀ broadest in the middle; with seven segments in both sexes. Legs slender, long, the fore ones short; tibiæ spurred, the spurs very small; lateral spines wanting. Wings hairy or only microscopically pubescent, large, broad, with a very broad base; usually longer than the abdomen; half open in repose. Auxiliary vein complete, terminating in the costa, and united to the first longitudinal vein by the sub-costal cross-vein; costal vein extending far beyond the tip of the second longitudinal vein, and almost reaching the apex of the wing; second longitudinal vein very much arched, forming a long-stalked fork, the anterior branch always very short, lying in a very very oblique position, terminating in the costa; fifth longitudinal vein more or less undulated.

A. Wings microscopically haired.

a. *Wings unspotted.*

138. *MACROCERA DELICATA*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.300 inch | ... | 7.62 millimètres. |
| Expanse of wings | 0.160 × 0.057 | ... | 4.06 × 1.44 |
| Size of body..... | 0.180 × 0.020 | ... | 4.56 × 0.50 |

Antennæ two-fifths longer than the body; joints of the scapus ochraceous-brown; all the flagellar joints deep brown, appearing almost cinereous in a certain light. Hypostoma ochraceous-brown. Front and palpi brown. Thorax bright ochraceous-brown inclining to ferruginous, nitidous, with three very narrow, rather indistinct, longitudinal ochraceous lines, the intermediate one disappears about the middle of the thorax, the lateral ones have each a row of black hairs, continue to the scutellum, and do not coalesce; the space enclosed by the lines gradually deepens into brown towards the collare; the hairs of the longitudinal rows short until past the

middle of the thorax, becoming setose posteriorly; the lateral margins setose; scutellum with very few hairs. Pleuræ ochraceous-brown, somewhat ferruginous. Halteres yellow at the base of the stem, the remainder smoky-brown; rather densely covered with a minute pubescence. Abdomen very slender, about three times the length of the head and thorax taken together, uniform yellowish-brown approaching light umber, with a rather dense long black pubescence; forceps of the same colour, small, densely haired. Coxæ ochraceous-brown, the fore pair densely setose in front; femora and tibiæ somewhat yellowish-brown; tarsi dusky on account of their dense black pubescence. Wings shorter than the body, almost hyaline, with a greyish tint, veins umber brown; brilliantly iridescent when viewed at a certain obliquity. All veins, except the cross-veins and the fifth longitudinal, ciliated. Auxiliary vein joining the costa before the base of the cross-vein. Extreme tip of the first longitudinal vein somewhat dilated.

Hab.—Middle Harbour (Skuse). September; one specimen under an over-hanging rock.

Obs.—This has much the general appearance of *M. Mastersi* described further on, but can readily be distinguished from it by the absence of the oblique band on the pleuræ, the microscopically haired wings, and the scarcely distended tip of the first longitudinal vein.

b. Wings with brown spots.

139. *MACROCERA DECOROSA*, sp.n. (Pl. xxxi. fig. 1.)

| | | |
|---------------------------|---------------|------------------------|
| ♂.—Length of antennæ..... | 0.420 inch | ... 10.66 millimètres. |
| Expand of wings..... | 0.220 × 0.075 | ... 5.59 × 1.89 |
| Size of body..... | 0.220 × 0.025 | ... 5.59 × 0.62 |
| ♀.—Length of antennæ..... | 0.420 inch | ... 10.66 millimètres. |
| Expand of wings..... | 0.270 × 0.090 | ... 6.85 × 2.27 |
| Size of body..... | 0.270 × 0.040 | ... 6.85 × 1.01 |

Antennæ nearly twice the length of the body; joints of the scapus yellowish-brown; flagellar joints pale brown, the base of the first yellowish-brown. Hypostoma yellowish-brown; front

piceous-castaneous, nitidous. Palpi yellowish-brown. Thorax piceous-castaneous, nitidous, with two longitudinal slightly convergent single rows of short brown hairs extending to the scutellum; the lateral margins and scutellum setose; humeri tipped with yellowish; scutellum pitch-brown. Pleuræ piceous-castaneous. Halteres very pale yellowish; the apical half of the club deep brown, with a short fine pubescence. Abdomen twice the length of the head and thorax taken together, narrowed at the base and extremity, in the middle narrower than the thorax; the segments piceous-castaneous, yellowish on the anterior border, the first segment being more than half yellow, the last entirely brown; densely clothed with a long brown pubescence; forceps rather wider than the terminal segment, its last joint short, bidentate, densely pubescent. Legs densely covered with a brown pubescence. Coxæ of the fore-legs yellow, brownish at the apex, densely setose in front; those of the intermediate- and hind-legs with the apical half piceous-castaneous. Femora of the fore- and intermediate-legs ochraceous-brown, the first pair paler than the others; of the hind-legs piceous-castaneous, somewhat ochraceous at the base and towards the apex. Tibiæ and tarsi dusky, almost cinereous-brown. Wings almost hyaline, with three distinct fuscous spots; the first, a narrow irregular nebulous band, stretches obliquely across the wings from below, and a little posterior to, the junction of the first longitudinal vein with the costa to the posterior angle, bordering a yellow patch between the fourth and fifth longitudinal veins, and extending behind it in the posterior angle; a more or less cuneate spot, having its base on the posterior margin, and enveloping the tip of the fifth longitudinal vein, runs obliquely to the anterior branch of the fourth longitudinal at a point opposite to the root of the fork of the third longitudinal vein; the third spot is a broad undulated transverse band near the apex of the wings, just enveloping anteriorly on its inner side the anterior branch of the second longitudinal vein, extending on each side of the tip of the anterior branch of the fourth longitudinal vein on the posterior margin. Besides these markings there is an indistinct longitudinal fuscous.

streak before the cross-vein in the inner marginal cell, and the marginal cell is yellow. The auxiliary vein joining the costa almost over, but slightly before, the base of the cross-vein.

♀.—Antennæ about two-fifths longer than the body; all the joints pale brown. Hypostoma pale brown. Palpi pale brown. Thorax varying from piceous-castaneous to almost black, in the former examples two paler longitudinal stripes are more or less distinctly visible; these stripes are broad at the collare, gradually running to a point posteriorly and disappearing entirely, and almost coalescent just before the scutellum; scutellum brownish-ochraceous, sometimes darker, sometimes paler. Abdomen rather longer than in the ♂; lamellæ of the ovipositor yellowish or yellowish-brown. Coxæ of the fore-legs almost imperceptibly tipped with brown. Femora of the hind-legs faded castaneous. The fuscous streak in the inner marginal cell is more distinct than in the ♂, and frequently extends beyond the cross-vein towards the apex of the first oblique band.

Hab.—Elizabeth Bay (Masters and Skuse); Mossman's Bay (Skuse); Lawson, Blue Mountains (Masters); Knapsack Gully, Blue Mountains (Skuse). August to October.

Obs.—I have only seen one ♂ example, which I found fluttering on a window; the ♀ forms have been taken by Mr. Masters and myself in like situations and in caves. Last April I took two small (imperfect) specimens of the ♀ from a spider's web in Mr. Macleay's garden; in these the spots on the wings are darker. They appear to represent a variety of *M. decorosa*, but an examination of better specimens may prove them to belong to a distinct species.

B. Wings distinctly haired.

a. *Wings unspotted.*

140. *MACROCERA MASTERSI*, sp.n. (Pl. xxxi. fig. 2).

♂.—Length of antennæ..... 0·320 inch ... 8·12 millimètres.
 Expanse of wings..... 0·180 × 0·060 ... 4·56 × 1·54
 Size of body.... 0·150 × 0·015 ... 3·81 × 0·38

| | | | |
|----------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ... .. | 0·320 inch | ... | 8·12 millimètres. |
| Expanses of wings..... | 0·180 × 0·060 | ... | 4·56 × 1·54 |
| Size of body... .. | 0·140 × 0·017 | ... | 3·55 × 0·42 |

♂ and ♀.—Antennæ about twice the length of the body ; joints of the scapus and first joint of the flagellum ochraceous-brown ; remaining flagellar joints deep brown, towards the tip of the flagellum appearing almost cinereous in a certain light. Hypostoma light reddish-brown. Front and palpi deep brown. Thorax ochraceous, with three ferruginous longitudinal cuneiform stripes ; the lateral ones appear from above to commence about half way between the humeri and the origin of the wings, but they continue over the lateral margins down the pleuræ in a broad deep brown band in an oblique direction to the tip of the intermediate coxæ ; the intermediate stripe begins at the collare ; all the stripes terminate at the scutellum and do not coalesce ; two narrow lines of ochraceous are visible between the stripes, along which are single, rather sparse, rows of very short black hairs ; lateral margins sparingly setose ; scutellum ochraceous with scarcely any hairs. Halteres yellowish on the stem, the club smoky-brown, the latter with a minute pubescence. Abdomen rather slender, smaller at the base and apex, somewhat more than twice the length of the the head and thorax together, ochraceous-brown, the two last segments (and base of the forceps) black, tinged with pale brown on the posterior margins ; densely clothed with long black hairs ; forceps rather wider than the terminal abdominal segment, ochraceous-brown ; lamellæ of the ♀ ovipositor black. Fore- and hind-coxæ ochraceous-brown, the first pair moderately setose in front ; femora and tibiæ somewhat yellowish-brown, the fore femora often paler than the other two pairs ; tarsi dusky on account of their dense pubescence. Wings longer than the body, almost hyaline, with a greyish tint, veins umber brown ; visibly hairy in all the cells opening on the border of the apical portion ; brilliantly iridescent with roseous and smaragdine, in which the latter generally greatly predominates. Nearly all the veins ciliated. Auxiliary vein joining the costa somewhat before the base of the

cross-vein ; first longitudinal vein greatly distended at the tip, and for a short distance before it. A yellowish streak appears in the cells on each side of the cross-vein.

Hab.—Knapsack Creek, Blue Mountains (Skuse) ; Elizabeth Bay (Masters & Skuse). August to October.

Obs.—The description of this species agrees almost exactly with that of the European *M. alpicola* by Winnertz (Beit. zu einer Mon. der Pilzmücken, p. 682, No. 11).

Sub-section V.—CEROPLATINÆ.

Genus 7. CEROPLATUS, Bosc.

Ceroplatus, Bosc, Act. Soc. Hist. Nat. de Paris, I. 1792, p. 42 ; *Platyura*, Meigen, Syst. Besch. I. 1818 ; *Ceroplatus*, Macquart, S. à B. Dipt. I. 1834, p. 140 ; *Platyura*, Walker, Ins. Brit. Dipt. III. 1856 ; Stæger, Kr. Tidsskr. 1840 ; *Ceroplatus*, Zetterstedt, Dipt. Scand. IX. 1850, p. 3439 ; Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 684.

Head small, broadly oval, flattened on the fore part. Eyes oval, sometimes a little emarginate on the inner side above. Ocelli three, in a curved line on the front. Palpi short, not incurved, with three or four joints ; first joint small, the others larger. Antennæ projecting forwards, shorter than the head and thorax together, very flat and broad, broadest in the middle, 2-+14-jointed ; joints of the scapus catilliform, in some species the first joint prolonged in front ; flagellar joints almost annular, the last joint conical or gemmiform. Thorax oval, highly arched ; scutellum almost semi-circular ; metathorax arched. Abdomen cylindrical or a little flattened, with seven segments in both sexes. Legs long ; tibiæ spurred, the spurs of unequal length ; lateral spines missing or exceedingly small ; one range on the inner side of the fore tibiæ, one on the inner side and two on the outer side of the hind tibiæ. Wings microscopically pubescent, shorter than the abdomen ; base broad and rounded off ; incumbent in repose. Costal vein extending beyond the tip of

the second longitudinal vein, ending before the apex of the wing; auxiliary vein complete, terminating in the costa before the origin of third longitudinal vein; sub-costal cross-vein missing; second longitudinal vein forming a long-stalked fork with a short anterior branch, the latter sometimes running into the costa, sometimes into the first longitudinal vein; petiole of the third sub-marginal cell always short; fifth longitudinal vein complete.

141. *CEROPLATUS MASTERSI*, sp.n. (Pl. xxxi. fig. 3).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.080 inch | ... | 2.02 millimètres. |
| Expanse of wings..... | 0.180 × 0.070 | ... | 4.56 × 1.77 |
| Size of body..... | 0.300 × 0.035 | ... | 7.62 × 0.88 |
| ♀.—Length of antennæ..... | 0.075 inch | ... | 1.89 millimètres. |
| Expanse of wings..... | 0.240 × 0.090 | ... | 6.09 × 2.27 |
| Size of body..... | 0.330 × 0.060 | ... | 8.37 × 1.54 |

♂.—Antennæ the length of the thorax, deep brown; first joint of the scapus prolonged anteriorly in an obtuse lobe; both joints of the scapus and first six or seven flagellar joints more or less obscurely tinged with ochraceous or ferruginous-ochraceous, the terminal joint yellow, narrower and longer than the one preceding it, with a minute bud-shaped projection; all the joints densely covered with a minute pubescence and fringed on the upper side with short semi-erect setaceous hairs. Front brown with black hairs, black on the vertex. Eyes non-contiguous, reaching as far as the lateral ocelli. Hypostoma pale yellow, ochraceous brownish-yellow. Palpi yellow, three-jointed, the first two joints small, sparsely covered with short hairs, the third joint longer than the first two combined, elliptical, densely covered with a microscopic pubescence sparsely interspersed with short hairs. Thorax ochraceous-brown, with a short dense black pubescence, setaceous on the lateral margins; almost covered with three deep brown longitudinal stripes, so that little of the ochraceous-brown is visible, the intermediate stripe broader than the others, very broad at the collare, cuneiform, terminating in a point a short distance before

the scutellum, the lateral ones beginning immediately below the humeri, slightly convergent, rather narrower posteriorly, not coalescent, terminating at the scutellum; pleuræ and metathorax brown or ochraceous-brown, scutellum ochraceous-brown, densely fringed with black setæ. Halteres short, the stem thick, yellow, with a few very short black hairs; the club pyriform, black or very deep brown, with apparently no pubescence. Abdomen somewhat flattened, not quite the width of the thorax, about three times the length; first segment much narrowed; ochraceous-brown, the posterior borders of the segments deep brown (this border of brown is generally narrow, but sometimes covers more than half the segment); densely clothed with black hairs; anal joint large and robust, forceps not the width of the terminal abdominal segment, deep brown, densely pubescent, arms narrow, bidentate at the extremity, and armed along the inner side with semi-erect spiniform processes.* Coxæ pale ochraceous with black hairs on the front; tips of the fore and intermediate, and apical half of the hindcoxæ deep brown on the front, also a more or less indistinct brownish spot generally appears in the middle of the front of the intermediate pair. Femora pale ochraceous, the intermediate and hind pairs tipped with deep brown, the latter sometimes with an indistinct longitudinal marking near the base. Tibiæ cinereous, the intermediate and hind pairs deep brown on the tips. Spurs black. Tarsi deep brown, the articulations somewhat lighter. Wings $\frac{2}{3}$ the length of the body, pellucid with a pale greyish-brown tint, darker at the apex; two brown spots on the anterior border. The first spot somewhat squarish, lying between the costa and base of the third longitudinal vein, not extending laterally quite to the tip of the first longitudinal vein on one side or to the tip of the auxiliary vein on the other side, generally covering a little of the base of the anterior branch of the third longitudinal; posterior branch of the fork not reaching the margin; second spot more transverse than

*The number of these spines varies; in four specimens I counted thirteen, eleven, ten and eight respectively. .

the first, extending from the anterior branch of the second longitudinal to the tip of the costa, thus entirely filling the first submarginal cell, and reaching posteriorly to the middle of the second submarginal cell. The auxiliary vein joining the costa opposite the base of the marginal cross-vein; anterior branch of the second longitudinal vein joining the costa a little beyond the tip of the first longitudinal; costal extending beyond the tip of the second longitudinal vein $\frac{1}{3}$ of the distance from that to the tip of the anterior branch of the third longitudinal.

♀.—Antennæ about the length of the thorax, the joints deep brown, nearly black (in some specimens with an almost imperceptible tinge of lighter brown on the flanks of the first six or seven flagellar joints), terminal joint and nipple-shaped projection lighter brown than the rest. Thorax brown, sometimes almost black, with little or no indications of the ochraceous brown found in the ♂. Pleuræ and metathorax ochraceous or ochraceous-whitish, irregularly blotched with brown or deep brown; scutellum brown or deep brown. Halteres black, the base of the stem yellow. Abdomen flat, about the width, and two and a half times the length, of the thorax, uniformly black, sometimes with a brownish tinge underneath; lamellæ of the ovipositor black or deep brown. Coxæ ochraceous-whitish or ochraceous, the intermediate pair without brown spots. Wings rather more than $\frac{2}{3}$ the length of the abdomen, dusky at the apex; posterior branch of the fork of the third longitudinal, both branches of the fourth longitudinal, and the fifth longitudinal vein not quite reaching the wing-margin.

Hab.—Elizabeth Bay, near Sydney (Masters and Skuse). September to March.

Genus 8. HETEROPTERNA, gen. nov.

Head large, as wide as the thorax, almost circular from below. Eyes large, oval, entire, very approximate on the face. Ocelli three, in a curved line on the front, the middle one much smaller. Palpi short, very like those of *Ceroplatus*. Antennæ projecting

forwards, shorter than the thorax, very flat and broad, broadest in the middle, 2- + 14-jointed; first joint of the scapus cupuliform, the second somewhat shorter and more catilliform; flagellar joints as in *Ceroplatus*. Thorax short, broadly oval, very gibbose, much more so than in *Ceroplatus*; scutellum very small, about one-third the width of the thorax, semi-circular; metathorax highly arched, very steep. Abdomen a little flattened, with seven segments. Legs short; tibiæ spurred, spurs small, those of the hind tibiæ larger than those of the others; tibiæ and tarsi of the hind pair of legs enormously thickened; metatarsus with a distinct range of small spines on the inner side. Wings microscopically pubescent, a little shorter than the abdomen; base very broad and rounded off; incumbent in repose. Costal vein extending beyond the tip of the second longitudinal vein, but not quite as far as the apex of the wing; auxiliary vein complete, terminating in the costa beyond the origin of the third longitudinal vein; sub-costal cross-vein missing; second longitudinal vein forming a long stalked fork with a short anterior branch, the latter running into the costa; petiole of the third sub-marginal cell short; fifth longitudinal vein complete.

Obs.—Having only two specimens of this insect, and those being in a dried state, I cannot examine the palpi with a great degree of satisfaction, but as far as I can judge they seem not to differ essentially from those of *C. Mastersi*.

142. HETEROPTERNA MACLEAYI, sp.n. (Pl. xxxi., fig. 4.)

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.050 inch | ... | 1.27 millimètres. |
| Expanse of wings | 0.130 × 0.055 | ... | 3.30 × 1.39 |
| Size of body..... | 0.230 × 0.040 | ... | 5.84 × 1.01 |

Antennæ not quite the length of the thorax; joints of the scapus brown; flagellar joints bright ochraceous, densely covered with a microscopic pubescence and fringed on the upper side with short semi-erect hairs. Head black. (Pl. xxxi., figs. 4a-b.) Palpi and hypostoma yellow. Thorax deep brown with a large roundish ochraceous spot under each humerus and a small pale ochraceous depression

above the origin of the wings; densely covered with short deep brown hairs; pleuræ deep brown, marmorated with pale ochraceous; scutellum deep brown, fringed with black setaceous hairs. Halteres short, the stem thick, yellow, the club large, pyriform, deep brown almost black; with very little visible pubescence. Abdomen flat, almost the width, and rather more than three times the length, of the thorax; first segment much narrowed; terminal segment narrower than the first, cylindrical; deep brown, the last two segments black; third and fourth dorsal segments bordered anteriorly with pale ochraceous, the fifth with a small pale ochraceous spot on the anterior corners; second, third and fourth segments marmorated underneath with pale ochraceous; forceps about the width of the terminal abdominal segment, cleft at the extremity, the inner arm with a small spur at its inner angle (Pl. xxxi., fig. 4c). Fore coxæ ochraceous, brownish at the base; intermediate and hind pairs deep brown; remaining joints in the fore- and intermediate-legs brownish-ochraceous, in the hind-legs deep brown, except that the basal half of the femora is ochraceous. Tibial spurs of the first two pairs of legs ochraceous-brown, those of the hind pair larger, pale ochraceous. Intermediate and hind coxæ shorter, and the latter more robust than the first pair. In the fore-legs the femora very little longer than the coxæ, the tibiæ about same length as the femora, and the tarsi $1\frac{1}{2}$ times the length of the tibiæ; in the intermediate legs the femora about twice the length of the coxæ, the tibiæ a little longer than the femora, and the tarsi $1\frac{1}{2}$ times the length of the tibiæ; in the hind-legs the femora somewhat more than twice the length of the coxæ, the tibiæ about $\frac{1}{2}$ longer than the femora, greatly swollen towards the apex when they are about as thick as the coxæ, the tarsi about the length of the tibiæ, metatarsal joint very robust, about as thick as the coxæ of the fore-legs, second joint about the thickness of the fore or intermediate tibiæ, the remaining joints more slender, but twice the thickness of the corresponding joints of the other legs (figs. 4d and 4e). Wings not $\frac{2}{3}$ the length of the body, pellucid, with pale greyish-brown tint, darker at the apex; a somewhat indistinct spot in the marginal cell, under the tip of the first longitudinal vein, also a

faint appearance at the tip of the auxiliary vein; beautifully iridescent. Auxiliary vein joining the costa a little beyond the origin of the third longitudinal; first longitudinal vein somewhat dilated at the tip; anterior branch of the second longitudinal vein joining the costa immediately beyond the tip of the first longitudinal; costal extending beyond the tip of the second longitudinal vein nearly half the distance from that to the tip of the anterior branch of the fork; second sub-marginal cell narrow, the posterior branch of the fork not quite reaching the wing margin; fifth longitudinal vein reaching the margin of the wing.

Hab.—Como and Woronora (Skuse). September. In caves.

Obs.—This is the only member of the family in which I have observed a proclivity for spiders' webs. With its legs and wings disposed longitudinally it seems fond of hanging inverted from a single thread, reminding one forcibly of a sleeping bat.

Genus 9. *PLATYURA*, Meig.

Platyura, Meigen, Illig. Mag. II. 1803, p. 261; Macquart, S. à B. Dipt. I. 1834, p. 141; Curtis, Brit. Ent. III. 1826, p. 134; Stæger, Kr. Tidsskr. 1840, p. 277; Zetterstedt, Dipt. Scand. X. p. 4078; Walker, Ins. Brit. Dipt. III. 1856, p. 47; Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 675.

Head small, broadly oval, the fore part flattened. Eyes oval, a little emarginate on the inner side above. Ocelli three, of unequal size, near together in a triangle on the broad front, the middle one smaller. Palpi prominent, incurved, four-jointed; the first joint small, second shortened-oval as long or somewhat shorter than the third, the third and fourth joints cylindrical, the fourth the longest. Antennæ as long as the head and thorax together or even longer, rarely shorter; arcuated, projecting forwards, somewhat compressed at the sides or cylindrical, gradually diminishing towards the tip, 2-+14-jointed; joints of the scapus distinctly set-off, the first cyathiform, the second one more cupuliform; flagellar joints compact. Thorax oval, highly arched; scutellum small, almost semi-circular; metathorax arched. Abdomen slender, with seven segments in both sexes; flattened, claviform, in the

♂ somewhat cylindrical at the base, rarely entirely cylindrical, always terminating in a forceps. Legs long; femora somewhat thickened, shorter than the tibiæ; tibiæ spurred; very small lateral spines; one inner and two outer ranges, or the fore-tibiæ without spines, and the hind pair with two ranges of lateral spines which are so small as to be only perceptible with a lens. Wings somewhat broad, base rounded off, as long as the abdomen or a little longer; incumbent in repose; microscopically pubescent. Costal vein extending beyond the tip of the second longitudinal vein, terminating some distance from the apex of the wing; auxiliary vein ending in the costa, rarely broken-off, usually united to the first longitudinal vein by the sub-costal cross-vein; anterior branch of the second longitudinal vein very short, ending either in the first longitudinal vein or in the costa; third sub-marginal cell always with a very short petiole; fifth longitudinal vein complete or incomplete.

B. Anterior branch of the second longitudinal vein running into the costa.

a. *Fifth longitudinal vein reaching the posterior margin.*

143. PLATYURA MAGNA, Walker.

Platyura magna, Walker, List Dipt. Brit. Mus. 1848, Part I. p. 89. (Div. B. Meig. Dipt. pl. 8, f. 19; Mac. Dipt. i. 142.)

Cinerea, abdomine ferrugineo, segmentorum marginibus posticis fuscis, antennis nigris, pedibus fuscis, femoribus flavis, tibiis apici flavo maculatis, alis subflavis apice cinereis.

Body grey; mouth yellow; eyes black; feelers black, compact, setaceous, slightly compressed, much shorter than the chest; abdomen ferruginous, rather long; hind borders of the segments brown; legs dark brown; thighs yellow; a yellow spot at the tip of each shank; wings slightly tinged with yellow; their tips and the veins brown. Length of the body, 7 lines; of the wings, 11 lines.

“New Holland.”

144. *PLATYURA VENUSTA*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·070 inch | ... | 1·77 millimètres. |
| Expanse of wings..... | 0·220 × 0·075 | ... | 5·58 × 1·89 |
| Size of body..... | 0·220 × 0·045 | ... | 5·58 × 8·13 |

Antennæ as long as the thorax; joints of the scapus and first two or three flagellar joints ochraceous; remaining flagellar joints dusky brown. Hypostoma, proboscis and palpi deep brown. Front and vertex black. Thorax brown, sub-nitidous, with three broad longitudinal stripes of a darker brown, the lateral ones beginning immediately below the humeri; intermediate stripe with an indistinct median line of very minute black hairs from the collare; the paler lines between the stripes beset with triple rows of short black hairs; the three rows terminating in a dense tuft of long setaceous hair in front of the scutellum; lateral margins, particularly posteriorly, with long setaceous hairs similar to the last; scutellum with a fringe of long black setæ. Halteres brown, with a dense minute pubescence, the base of the stem ochraceous. Abdomen deep brown, the segments indistinctly bordered posteriorly with ochraceous-brown; moderately covered with somewhat long black hairs; lamellæ of the ovipositor deep brown. Coxæ sordid ochraceous, the intermediate and hind pairs tipped with brownish; femora less sordid ochraceous, the intermediate and hind pairs deep brown at the base, extending almost one-third of their length; tibiæ and tarsi dusky brown, almost black. Spurs black. In the fore-legs the tibiæ and metatarsal joint of about equal length. Wings as long as the body, pellucid with a yellow tint, deeper yellow between the second longitudinal vein and the costa; an oblique brown spot from the middle of the marginal cell to the base of the third submarginal, also four brown spots round the apex of the wing, the first and largest descending almost to the anterior branch of the third longitudinal from the tip of the costal and second longitudinal veins, the second in the third submarginal cell, the fourth smaller, immediately below the third longitudinal vein in the first posterior cell, the fourth is larger than the last,

irregular, extending each side of the tip of the anterior branch of the fourth longitudinal vein at the wing margin, the two last spots are inclined to coalesce; a brown line under the fourth longitudinal terminates on the posterior margin in a pale brown spot, which also envelopes the tip of the fifth longitudinal. Costal vein extending beyond the junction with the second longitudinal one-third of the distance from that to the tip of the anterior branch of the third longitudinal; anterior branch of the second longitudinal at an angle of 45° , its base situated at a point one-fourth the distance from the tip of the first longitudinal vein to the tip of the second longitudinal; marginal cross-vein slender at its basal half; rudimentary sixth longitudinal vein wanting.

Hab.—Sydney (Skuse). May.

Var. β.—A ♀ specimen differs from the above in having the coxæ ferruginous-ochraceous, the femora yellowish, the intermediate and hind pairs being marked at the base in the front only, the tibiæ and tarsi not so dark, the tibial spurs not so long and the two middle spots on the apical portion of the wing coalescent, but I cannot detect any deviations that would in my estimation raise it above the rank of a variety.

Hab.—Middle Harbour (Skuse). September.

Obs.—Individuals of this species may vary considerably, only these two have come under my notice.

145. *PLATYURA FENESTRALIS*, sp.n. (Pl. xxxi., fig. 5).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·080 inch | ... | 2·02 millimètres. |
| Expanse of wings..... | 0·150 × 0·055 | ... | 3·81 × 1·39 |
| Size of body..... | 0·210 × 0·030 | ... | 5·33 × 0·76 |
| ♀.—Length of antennæ..... | 0·055 inch | ... | 1·39 millimètres. |
| Expanse of wings..... | 0·180 × 0·070 | ... | 4·56 × 1·77 |
| Size of body..... | 0·230 × 0·047 | ... | 5·84 × 1·23 |

♂.—Antennæ rather more than one-third the length of the body; in the ♀ about as long as the thorax; joints of the scapus and

base of the first flagellar joint brown; the flagellar joints very deep brown. Hypostoma, proboscis and palpi brown. Front and vertex black. Thorax brown, the humeri ochraceous, in the ♀ pale ochraceous-brown, with three longitudinal rows of short black hairs, the intermediate one is double and stops some distance before the scutellum, the lateral ones are treble, almost reach the scutellum, and terminate in two or three setaceous hairs; lateral margins densely beset, and scutellum fringed, with black setaceous hairs. Halteres ochraceous, the club more or less brownish, with a minute black pubescence. Abdomen brown or ochraceous-brown, the segments more or less bordered with black anteriorly, the black often appears as longitudinal spots on the lateral borders of the dorsal segments, extending half their length, and appearing on the underside as small lateral spots anteriorly; ♂ forceps, ♀ ovipositor and lamellæ, and generally the last two segments rather deep brown. Coxæ and femora pale ochraceous; the intermediate and hind coxæ slightly tipped with brown, their respective femora very indistinctly brownish at the base. Tibiæ and tarsi dusky brown, the latter almost black. Tibial spurs black. In the fore-legs the tibiæ somewhat longer than the metatarsal joint. Wings shorter than the body, pellucid, with a very pale brownish tint, and spotted with brown very similarly to those of *P. venusta*, except that an additional spot occurs under the anterior branch of the second longitudinal vein, the anterior half of the marginal cross-vein is blurred with brown, the spots at the apex coalesce and form an irregular band from the tips of the costal and second longitudinal veins to the anterior branch of the fourth longitudinal, and the line and spot under the fourth longitudinal are scarcely distinguishable; the veins deep brown; all the spots are a paler brown than those of *P. venusta*. Costal vein extending beyond the junction with the second longitudinal, about one-third of the distance from that to the tip of the anterior branch of the third longitudinal vein; remaining venation similar to that of *P. venusta*.

Hab. — Elizabeth Bay (Masters and Skuse). November, December and January. Common in windows.

Obs.—I have also taken one or two specimens of this during the month of May.

146. *PLATYURA SCHINERI*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.055 inch | ... | 1.39 millimètres. |
| Expanse of wings..... | 0.180 × 0.070 | ... | 4.56 × 1.77 |
| Size of body..... | 0.200 × 0.045 | ... | 5.08 × 1.13 |

Antennæ slightly shorter than the thorax; joints of the scapus brown; flagellar joints black or very deep brown, the last joint with a very small nipple-shaped projection. Hypostoma, proboscis and palpi brown. Front and vertex black. Thorax pale ochraceous with three prominent deep brown stripes, the lateral ones beginning a little below the humeri; all coalescing at the scutellum, separated for the greater part of their length by a narrow line of the pale ochraceous; densely covered with a short black pubescence, setaceous on the lateral margins about the humeri, the origin of the wings, and near the scutellum; scutellum ochraceous, tinged with brownish anteriorly, fringed with black setaceous hairs. Pleuræ and metathorax deep brown almost black. Halteres yellow, stem sparsely covered with very short hairs, club with a microscopic pubescence. Abdomen deep brown, the second to the fifth segment deeply bordered posteriorly with ochraceous, the sixth and seventh segments indistinctly marked with ochraceous; densely clothed with a black pubescence. Coxæ pale ochraceous, the fore pair not setose, densely covered in front with a very short black pubescence, the intermediate and hind pairs more or less pubescent towards the apex; femora dusky-ochraceous on account of their dense pubescence, the intermediate and hind pairs deep brown at the base; tibiæ and tarsi dusky, almost black. Tibial spurs black. In the fore-legs the tibiæ somewhat larger than the metatarsal joint. Wings rather shorter than the body, pellucid, with a greyish tint, somewhat smoky at the tip; veins deep brown. Costal vein extending beyond the junction with the second longitudinal vein nearly one-third of the distance from that to the tip of the anterior branch of the third longitudinal;

posterior branch of the third longitudinal indistinct at its base and not quite reaching the border of the wing; both branches of the fourth longitudinal not quite reaching the posterior border; anterior branch of the second longitudinal at an angle of 45° , its base situated at a point rather more than one-third the distance from the tip of the first longitudinal to the tip of the second longitudinal; auxiliary vein joining the costa a little beyond the tip of the marginal cross-vein.

Hab.—Sydney (Skuse). September.

Obs.—I have only seen a single specimen.

147. *PLATYURA CONFORMIS*, sp.n.

| | | | |
|----------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ | 0.047 inch | ... | 1.23 millimètres. |
| Expanse of wings..... | 0.150 × 0.045 | .. | 3.81 × 1.13 |
| Size of body..... | 0.180 × 0.040 | .. | 4.56 × 1.01 |

Antennæ shorter than the thorax; joints of the scapus brown; flagellar joints black or very deep brown, last joint with a very small nipple-shaped projection. Hypostoma, proboscis, and palpi brown. Front and vertex black. Thorax black, somewhat ochraceous at the humeri and indistinctly so along the lateral borders, densely covered with a short black pubescence, setaceous on the lateral borders about the humeri, the margin of the wings, and near the scutellum; scutellum black, fringed with black setæ. Pleuræ and metathorax black. Halteres yellow, sparsely fringed with very short hairs on the stem, microscopically pubescent. Abdomen black on the dorsal segments, the second to the fifth segment indistinctly bordered posteriorly with a very narrow band of sordid ochraceous, underneath ochraceous, sometimes ferruginous-ochraceous; lamellæ of the ovipositor deep brown. Coxæ pale ochraceous, the fore pair not setose, densely covered in front with a very short black pubescence, the intermediate and hind pairs more or less pubescent towards the apex; femora dusky ochraceous on account of their dense pubescence, brownish at the base; tibiæ and tarsi dusky, almost black. Tibial spurs black. In

the fore-legs the tibiae slightly longer than the metatarsal joint. Wings a little shorter than the body, pellucid with a greyish tint, very slightly smoky at the tip, veins deep brown. Costal vein extending beyond the junction with the second longitudinal vein nearly one-third of the distance from that to the tip of the anterior branch of the third longitudinal vein; anterior branch of the second longitudinal vein at an angle of 45° , its base situated at a point rather less than one-third of the distance from the tip of the first longitudinal vein to the tip of the second longitudinal; auxiliary vein joining the costa a little beyond the tip of the marginal cross-vein; posterior branch of the third longitudinal vein indistinct at its base, and not quite reaching the wing-margin; both branches of the fourth longitudinal not quite reaching the posterior margin.

Hab.—Glenbrook (Masters); Sydney (Masters and Skuse). November, December, and January.

Obs.—Although I have a large number of specimens before me, there is not a single ♂ among them. This species is evidently very closely allied to the preceding, but its smaller size and black thorax at once distinguish it.

b. *Fifth longitudinal vein not reaching the posterior margin.*

148. *PLATYURA FULVA*, sp.n.

♀.—Length of antennæ..... 0.030 inch ... 0.76 millimètre.

Expanse of wings..... 0.220 × 0.070 ... 5.58 × 1.77

Size of body..... 0.220 × 0.040 ... 5.58 × 1.01

Antennæ half the length of the thorax; joints of the scapus fulvous or ferruginous; flagellar joints brown. Hypostoma and front fulvous; vertex black or very deep brown. Palpi brown. Thorax fulvous, densely covered with short black hairs, setaceous on the lateral borders from below the humeri to the scutellum; scutellum fulvous, fringed with black setaceous hairs. Pleuræ and metathorax ochraceous, with some pale fuscous. Halteres ochraceous, the club fulvous, with a minute pubescence. Abdomen about two and a half times the length of the thorax, very

narrow at the base, a little broader than the thorax posteriorly; fulvous, densely clothed with a short black pubescence; ovipositor short, fulvous. Coxæ and tibiæ ochraceous, densely covered in front with very short black hairs; tibiæ and tarsi dusky; the latter almost black. Tibial spurs black. In the fore-legs the meta tarsus somewhat longer than the tibiæ. Wings the length of the body, pellucid, with a pale fulvous tint; veins fulvous, the costal and first, second and fourth longitudinal veins dark. Costal vein extending beyond the junction with the second longitudinal vein about one-third of the distance from that to the tip of the anterior branch of the third longitudinal vein; auxiliary vein reaching the costa opposite to the tip of the marginal cross-vein; anterior branch of the second longitudinal vein at an angle of 45° , its base situated at a point about two-fifths of the distance from the tip of the first longitudinal to the tip of the second longitudinal vein; fifth longitudinal vein very pale, disappearing a short distance from the margin.

Hab.—Sydney (Masters and Skuse). May.

149. *PLATYURA MONTICOLA*, sp.n.

| | | | |
|---------------------------|----------------------|-----|--------------------|
| ♂.—Length of antennæ..... | 0.045 inch | ... | 1.13 millimètres. |
| Expanse of wings..... | 0.130×0.050 | ... | 3.30×1.27 |
| Size of body..... | 0.130×0.020 | ... | 3.30×0.50 |
| ♀.—Length of antennæ..... | 0.040 inch | ... | 1.01 millimètres. |
| Expanse of wings..... | 0.130×0.050 | ... | 3.30×1.27 |
| Size of body..... | 0.120×0.025 | ... | 3.04×0.62 |

♂.—Antennæ about the length of the thorax; ♀ shorter than the thorax and more slender than in the ♂; joints of the scapus ochraceous-brown, with a few short hairs; flagellar joints dark, their dense minute pubescence with a greyish reflection. Hypostoma brown. Front black. Palpi ochraceous-brown. Thorax fuliginous-brown, almost black in some specimens, levigate, with a somewhat greyish reflection, rather densely covered with tolerably

long black setaceous hairs; the humeri deeply tipped with ochraceous; three longitudinal treble rows of shorter brown hairs may be indistinctly determined running almost parallel to one another to the middle of the thorax, where the intermedial row appears to terminate, the lateral ones not reaching the scutellum and not convergent; under moderate amplification the fuliginous-brown of the thorax resolves itself into three very broad stripes, the lateral ones beginning just below the humeri and separated from the intermediate one by very indistinct ochraceous lines, the latter supporting the lateral rows of short brownish hairs; pleuræ and metathorax deep brown, nearly as dark as the thorax; scutellum brown, more or less tinged with ochraceous, fringed with setaceous hairs. Halteres ochraceous-yellow, with a very minute brown pubescence, the hairs on the stem somewhat longer. Abdomen slender, about three times the length of the thorax, deep brown on the dorsal segments, the two terminal ones generally almost black, somewhat ochraceous-brown underneath; densely clothed with tolerably long black hairs; ♂ forceps densely haired, as wide as the terminal segment. Coxæ ferruginous-ochraceous or ochraceous-yellow; femora and tibiæ brownish-ochraceous, the tibiæ darker than the femora; tarsi dusky brown. Tibial spurs black. In the fore-legs the tibiæ $\frac{1}{4}$ longer than the metatarsal joint. Wings as long as the body in the ♂, rather longer than the body in the ♀, pellucid with a very pale brownish-grey tint; the costal and first, second and fourth longitudinal veins brown, the rest paler brown. Costal vein extending beyond the junction with the second longitudinal vein about two-thirds of the distance from that to the tip of the anterior branch of the fork of the third longitudinal vein; auxiliary vein reaching the costa almost imperceptibly before the tip of the marginal cross-vein; anterior branch of the second longitudinal inclined at an angle of about 45° , its base situated at a point somewhat before, immediately opposite, or slightly beyond the tip of the first longitudinal vein; fork of the third longitudinal rather more than three times the length of the petiole; fifth longitudinal vein disappearing at two-thirds of the distance to the margin.

Hab.—Lawson, Blue Mountains, and Bowral (Masters).
January.

Obs.—Mr. Masters tells me that he found this species inhabiting caves in thousands in both the above-mentioned widely separate localities; the caves at Lawson are very damp, and so overshadowed by precipitous rocks, that on the hottest days in January the place is perfectly cool and gloomy, while those at Bowral are situated in a small dry gully altogether exposed to the sun; at the first locality another fly, *Brachydicrania fumosa*, described by me in the present paper, occurs in large numbers, and at first glance appears greatly to resemble the above.

150. *PLATYURA GRAPHICA*, sp.n. (Pl. xxxi., fig. 6).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·045 inch | ... | 1·13 millimètres. |
| Expanse of wings..... | 0·120 × 0·045 | ... | 3·04 × 1·13 |
| Size of body..... | 0·120 × 0·020 | ... | 3·04 × 0·50 |
| ♀.—Length of antennæ..... | 0·040 inch | ... | 1·01 millimètres |
| Expanse of wings..... | 0·140 × 0·050 | ... | 3·55 × 1·27 |
| Size of body..... | 0·140 × 0·030 | ... | 3·55 × 0·76 |

♂.—Antennæ as long as the thorax, somewhat shorter in the ♀; joints of the scapus and flagellum deep brown, almost black, the first flagellar joint more than one-half longer than the second. Hypostoma and palpi deep brown. Front and vertex black. Thorax brown, densely covered with a short black pubescence, setaceous on the lateral borders; humeri and collare pale ochraceous; scutellum brown, fringed with setaceous hairs. Pleuræ and metathorax ochraceous, lateral callosity of the metanotum brown. Halteres ochraceous, the club brown, sparingly covered with a minute pubescence. Abdomen deep brown, the segments indistinctly bordered posteriorly with sordid ochraceous, moderately clothed with black hairs; ♂ forceps brown, armed with two pairs of long, slightly bent, aculeiform hooks; ♀ ovipositor short, the lamellæ ochraceous. Coxæ ochraceous, the fore pairs

marked laterally, more or less distinctly, with brown, especially in the ♂; intermediate and hind pairs with an indistinct brownish spot on the front; femora ochraceous; tibiae and tarsi dusky brown, the tarsi considerably blacker than the tibiae. Tibial spurs black. In the fore-legs the tibiae $\frac{1}{4}$ longer than the metatarsus. Wings as long as the body, almost hyaline, marked with a diffuse fuscous-brown reticulation; behind the fourth longitudinal vein there is no reticulation, but an oblique spot extending nearly to the margin; the base of the wing is clear to the marginal cross-vein; a small brown spot occurs at the tip of cross-vein and another at the extremity of the auxiliary vein; clear spaces occur a little before and a little beyond the anterior branch of the second longitudinal vein; a space from the second longitudinal to the anterior branch of the fourth longitudinal, extending laterally from the base of the third sub-marginal cell about half way to the tip of the wing; in the second sub-marginal cell a large roundish space under the extremity of the second longitudinal, and a small one under the tip of the costal; between the third and fourth longitudinal veins and their branches roundish spaces occur on the posterior margin; an oblong space at the bases of the first and second posterior cells, and a square in the middle of the latter reaching the veins anteriorly and posteriorly. Auxiliary vein reaching the margin over the tip of the marginal cross-vein; anterior branch of the second longitudinal vein very little oblique, rather more so in the ♀, its base situated at a point considerably less than one-fourth the distance from the tip of the first longitudinal vein to the tip of the second longitudinal; costal extending beyond the tip of the second longitudinal half way to the tip of the anterior branch of the third longitudinal. Fifth longitudinal very pale and indistinct, almost reaching the margin.

Hab.—Elizabeth Bay (Skuse). December.

Genus 10. PSEUDOPLATYURA, gen. nov.

Head small, broadly ovate, the fore part flattened; vertex somewhat elevated. Eyes long-oval, a little emarginate on the inner side above. Ocelli three, arranged in a triangle on the front, the middle

one smallest. Palpi prominent, incurved, four-jointed ; first, second and third joints of almost equal length, but the second just perceptibly longer than the first and somewhat shorter than the third, also thicker and more rounded than the other joints, third joint ovate, fourth joint twice the length of the third, somewhat fusiform. (Pl. xxxi., fig. 7a). Antennæ shorter than the thorax ; projecting forwards, arcuated, almost cylindrical, somewhat flattened, 2- + 13-jointed ; joints of the scapus distinctly set-off, the first cyathiform, the second cupuliform, shorter than the first ; flagellar joints compact, the terminal joint short, gemmiform. Thorax longish-oval, highly arched ; scutellum small, nearly semi-circular ; meta-thorax arched. Abdomen slender, with seven segments in both sexes ; in the ♂ somewhat flattened, a little thicker towards the middle, cylindrical at the base ; in the ♀ flattened, claviform. Legs long and slender, the fore pair considerably shorter than the others ; femora rather more slender than the coxæ, shorter than the tibiæ ; tibiæ spurred ; lateral spines extremely small : fore-tibiæ without lateral spines and the spurs small, intermediate tibiæ with one range on the inner and one on the outer side, the spines of the latter widely separated, hind tibiæ apparently with only one range of widely separated spines on the outer side. Wings moderately broad, rounded off at the base, longer than the abdomen, microscopically pubescent. Costal vein extending beyond the tip of the second longitudinal vein ; terminating immediately before the apex of the wing ; auxiliary vein joining the costa immediately before the tip of the marginal cross-vein ; sub-costal cross-vein missing ; anterior branch of the second longitudinal vein rather long, issuing from the second longitudinal vein considerably before the tip of the first longitudinal but ending in the costa ; anterior branch of the fork of the third longitudinal vein joining the margin immediately below the apex of the wing, consequently very close to the tip of the costal vein ; petiole of the third sub-marginal cell short ; fifth longitudinal vein incomplete.

151. *PSEUDOPLATYURA DUX*, sp.n. (Pl. xxxi., fig. 7.)

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0·030 inch | ... | 0·76 millimètre. |
| Expanse of wings..... | 0·130 × 0·040 | ... | 3·30 × 7·01 |
| Size of body..... | 0·150 × 0·020 | .. | 3·81 × 0·50 |
| ♀.—Length of antennæ..... | 0·027 inch | ... | 0·67 millimètre. |
| Expanse of wings..... | 0·135 × 0·045 | ... | 3·42 × 1·13 |
| Size of body..... | 0·135 × 0·020 | ... | 3·42 × 0·50 |

♂ and ♀.—Antennæ slender, shorter than the thorax; joints of the scapus ochraceous-brown, very sparingly pubescent; flagellar joints deep brown or black. Hypostoma and palpi brown. Front and vertex deep brown or nearly black. Thorax brown, with three ill-defined longitudinal double rows of short brown hairs, not coalescent posteriorly; the lateral borders and scutellum with very long setaceous hairs; pleuræ, scutellum and metathorax brown. Halteres brown, the stem ochraceous, sprinkled with very short hairs. Abdomen slender in the ♂, about three times the length of the thorax, shorter and rather more dilated in the ♀; in both sexes the seventh segment small; brown, with the first two segments and venter more or less ochraceous-brown, densely clothed with brown hairs; ♂ forceps deep brown, densely haired, about the width of the terminal abdominal segment; lamellæ of ♀ ovipositor brown. Coxæ and femora ferruginous-ochraceous; tibiæ brown; tarsi dusky brown. Tibial spurs black. In the fore-legs the tibiæ $\frac{1}{3}$ longer than the metatarsus. Wings pellucid, with a greyish tint, not darkened at the apex; brilliantly iridescent; costal and first two longitudinal veins brown, the rest yellowish-brown. Auxiliary vein joining the costa opposite or almost imperceptibly before the tip of the marginal cross-vein; marginal cross-vein pale and rather indistinct; anterior branch of the second longitudinal vein tolerably long and oblique, its base situated as much before the tip of the first longitudinal vein as its tip is beyond; costal vein extending beyond the tip of the second longitudinal vein $\frac{3}{4}$ the distance from that to the tip of anterior

branch of the fork ; fifth longitudinal vein indistinct, not reaching the border.

Hab.—Glenbrook (Masters) ; Sydney (Skuse). November.

Genus 11. ANTRIADOPHILA, gen. nov.

Head small, broadly oval, the fore part flattened ; vertex somewhat elevated. Mouth parts prolonged. Eyes longish-oval, a little emarginate on the inner side above. Ocelli three, arranged in a triangle on the broad front, the middle one smaller than the rest (except in *A. petulans*, where all three are large and of equal size). Palpi prominent, incurved, four-jointed ; first joint very small, cylindrical, second almost elliptical, thicker than the first and nearly twice the length, third joint sub-cylindrical, not as thick as, and shorter than, the second, fourth joint twice the length of the third and more slender than the first. (Pl. xxxi., fig. 8a). Antennæ generally shorter than the thorax, sometimes as long as the head and thorax together ; projecting forwards, arcuated, very little compressed, 2-+12-jointed ; joints of the scapus distinct, cupuliform, or the first joint cyathiform and the second cupuliform ; flagellar joints compact, the terminal joint long, conical. Thorax longish-oval, arched ; scutellum small, semi-circular ; metathorax arched. Abdomen slender, with seven segments in both sexes, in the ♂ a little flattened, terminating with a forceps ; in the ♀ flattened, claviform, the ovipositor with small terminal lamellæ. Legs long and slender, the first pair shorter than the others ; femora about as thick as the coxæ ; tibiæ spurred, the spurs of the fore-legs, and sometimes also those of intermediate-legs, short ; lateral spines absent,* or very minute and occurring on the intermediate- and hind-legs : the intermediate pair with one range on the outer side, the hind pair with two ranges on the outer side. Wings moderately broad, rounded off at the base, longer than the abdomen, microscopically pubescent. Costal vein extending much beyond the tip of the second longitudinal vein, almost reaching

*I cannot make out any lateral spines on the tibiæ of *A. electilis* and *A. nigricolor*.

the apex of the wing ; auxiliary vein joining the costa immediately before the tip of the marginal cross-vein ; no sub-costal cross-vein ; anterior branch of the second longitudinal vein short, joining the costa, its base situated beyond the tip of the first longitudinal ; anterior branch of the third longitudinal joining the margin immediately below the apex of the wing, consequently very close to the tip of the costal vein ; petiole about $\frac{1}{3}$ the length of the third sub-marginal cell ; fifth longitudinal vein imperfect.

152. *ANTRIADOPHILA NUBIPENNIS*, sp.n.

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expansé of wings..... | 0.130 × 0.045 | ... | 3.30 × 1.13 |
| Size of body..... | 0.120 × 0.020 | ... | 3.04 × 0.50 |
| ♀.—Length of antennæ..... | 0.025 inch | ... | 0.62 millimètre. |
| Expansé of wings..... | 0.140 × 0.050 | ... | 3.55 × 1.27 |
| Size of body..... | 0.125 × 0.025 | ... | 3.16 × 0.62 |

Antennæ slender, shorter than the thorax ; joints of the scapus deep pitch-brown ; flagellar joints deep dusky brown, rather smaller than those of the flagellum, terminal joint conical, about twice the length of the joint immediately preceding it. Head black. Hypostoma and palpi black or deep brown. Thorax brown, with five longitudinal lines of deep brown, the three middle ones running from the collare to the scutellum, each supporting a double row of short brown hairs ; an ochraceous-brown spot occurs before the scutellum, bordered laterally by the medial two lines ; the intermediate line not quite reaching the scutellum, stopping at the ochraceous-brown spot ; humeri somewhat tipped with sordid ochraceous or ochraceous-brown ; sprinkled with short brown hairs between the lateral borders and the medial two lines ; lateral borders and scutellum setiferous ; pleuræ and metathorax deep brown. Halteres wholly yellow, sprinkled with a few minute hairs. Abdomen twice the length of the thorax, deep brown (in some specimens almost fuliginous), the second, third and fourth segments with a broad band of ochraceous anteriorly, the deep brown appearing in

most specimens as only a narrow border to the hind margin ; fifth segment with a slight indication of ochraceous anteriorly in the ♂, almost as distinct as on the other segments in the ♀ ; the ochraceous markings equally distinct on the underside. Coxæ and femora deep brown, the latter generally more or less tinged in front with ochraceous-brown ; tibiæ and tarsi ochraceous-brown ; the intermediate and hind tibiæ with minute lateral spines. Tibial spurs black. In the fore-legs the tibiæ $\frac{1}{3}$ longer than the metatarsus. Wings almost hyaline, with pale brownish-grey cloudings, veins brown. A transverse band from the anterior branch of the second longitudinal vein to the tip of the anterior branch of the fourth longitudinal vein, bending forwards at the third sub-marginal cell and continued in a narrow line along each of the branches of the fork ; that of the anterior branch meeting half way to the margin a patch between the tip of the second longitudinal vein and the end portion of the anterior branch of the fork ; a small, scarcely noticeable spot in the marginal cell against the auxiliary vein about the tip ; lastly an irregularly shaped marking in the second posterior cell, starting from the anterior branch of the fourth longitudinal fork opposite to the base of third longitudinal vein, crossing to the posterior branch, extending a little to the other side of it, filling the posterior half of the second posterior cell to the wing-margin, and indistinctly joining the first-mentioned transverse band a little before the margin. Auxiliary joining the costa immediately before the tip of the marginal cross-vein, rather indistinct at the tip ; first longitudinal vein reaching the costa immediately before the base of the fork ; anterior branch of the second longitudinal vein short, at an angle of about 45° , its base situated at a point about $\frac{1}{3}$ of the distance from the tip of the first longitudinal vein to that of the second longitudinal vein ; costal vein extending beyond the tip of the second longitudinal vein $\frac{3}{4}$ the distance from that to the tip of the anterior branch of the fork ; fifth longitudinal vein very indistinct, not reaching the margin ; a very short and indistinct rudiment of a sixth longitudinal vein.

Hab.—Lawson, Blue Mountains (Masters); Knapsack Gully, Blue Mountains, and Middle Harbour (Skuse). September to January.

153. *ANTRIADOPHILA PETULANS*, sp.n. (Pl. xxxi., fig. 8).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expanse of wings..... | 0.120 × 0.045 | ... | 3.04 × 1.13 |
| Size of body..... | 0.120 × 0.020 | ... | 3.04 × 0.50 |
| ♀.—Length of antennæ..... | 0.025 inch | ... | 0.62 millimètre. |
| Expanse of wings..... | 0.120 × 0.045 | ... | 3.04 × 1.13 |
| Size of body..... | 0.120 × 0.020 | ... | 3.04 × 0.50 |

♂ and ♀.—Antennæ slender, much shorter than the thorax; joints of the scapus deep brown, not so dark as those of the flagellum; flagellar joints fuliginous, considerably smaller than the joints of the scapus. Front and vertex black. Hypostoma, palpi, and proboscis deep dusky brown. Thorax brown or light brown, with three longitudinal double rows of short black hairs, which become single rows posteriorly, and are not coalescent; in a light brown thorax the space between the longitudinal rows of hairs appears darker, particularly on the anterior half; lateral borders and scutellum setiferous; pleuræ and metathorax brown or deep brown. Halteres wholly yellow, with a sprinkling of minute hairs. Abdomen rather more than twice the length of the thorax, brown or deep brown, the last two segments frequently black or nearly black, densely clothed with black or deep brown hairs; in the ♂ not as wide as the thorax, forceps small; in the ♀ wider than the thorax, the terminal lamellæ brown. Coxæ, femora, and tibiæ ochraceous or brownish-ochraceous, the fore coxæ sometimes brown on the front; tarsi dusky brown. Tibial spurs black; the intermediate and hind tibiæ with minute lateral spines. In the fore-legs the tibiæ about $\frac{1}{3}$ longer than the metatarsal joint (3:2). Wings pellucid with a very pale greyish-brown tint, perceptibly darker at the apex and on the posterior border about the branches of the fourth longitudinal; brilliantly iridescent; veins brown, the costal and first two longitudinal

veins very dark. Auxiliary vein very pale, reaching the costa slightly before the tip of the marginal cross-vein; first longitudinal vein reaching the costa a short distance beyond the base of the fork; anterior branch of the second longitudinal vein pale brown, at an inclination less than 45° , joining the costa at a point about $\frac{1}{4}$ of the distance from the tip of the first longitudinal vein to that of the second longitudinal vein; costal vein extending beyond the tip of the second longitudinal vein about $\frac{2}{3}$ of the distance from that to the tip of the anterior branch of the fork.

Hab.—Mossman's Bay, near Sydney; Woronora (Skuse). September and October.

Obs.—At the first-named locality I found this species represented in great numbers in some caves not far from the sea-shore; at Woronora I took only a single specimen.

154. *ANTRIADOPHILA ELECTILIS*, sp.n.

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂ —Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expanse of wings..... | 0.100 × 0.035 | ... | 2.54 × 0.88 |
| Size of body..... | 0.100 × 0.015 | ... | 2.54 × 0.38 |

Antennæ slender, about the length of the thorax; joints of the scapus deep brown, appearing very little lighter than the flagellar joints, the latter sooty-brown, nearly the same size as the joints of the scapus. Head black. Hypostoma, palpi and proboscis sooty-brown. Thorax black, levigate, with three longitudinal double rows of short black hairs; humeri very slightly tinged with brownish-ochraceous; lateral borders and scutellum setiferous; pleuræ, scutellum and metathorax black. Halteres wholly yellow, with very little visible pubescence. Abdomen rather more than twice the length, and about the width, of the thorax, black, densely covered with short hairs; underneath greyish-ochraceous; forceps small. Coxæ and femora brownish-ochraceous; tibiæ dusky ochraceous; tarsi fuliginous. Tibial spurs black; lateral spines missing (or exceedingly microscopic). In the fore-legs the tibiæ $\frac{1}{3}$ longer than the metatarsal joint (3:2). Wings pellucid,

with a very pale greyish-brown tint, brilliantly iridescent; costal and first two longitudinal veins deep brown. Auxiliary vein very pale, joining the costa immediately before the tip of the marginal cross-vein; first longitudinal vein reaching the costa almost imperceptibly before the base of the fork; anterior branch of the second longitudinal vein paler than the second longitudinal, at an inclination of 45° , joining the costa at a point about $\frac{1}{3}$ of the distance from the tip of the first longitudinal vein to that of the second longitudinal vein; costal vein extending beyond the tip of the second longitudinal vein about $\frac{2}{3}$ of the distance from that to the tip of anterior branch of the fork.

Hab.—Elizabeth Bay, near Sydney (Skuse). September.

Obs.—The type is the only specimen I have seen.

155. ANTRIADOPHILA NIGRA, sp.n.

| | | | |
|---------------------------|----------------------|-----|--------------------|
| ♂.—Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expanse of wings..... | 0.080×0.030 | ... | 2.02×0.76 |
| Size of body..... | 0.080×0.012 | ... | 2.02×0.30 |

Antennæ slender, as long as the head and thorax combined; deep brown, the joints of the scapus somewhat lighter than those of the flagellum; flagellar joints equal in size to those of the scapus, the terminal joint longer than the rest, conical. Head, hypostoma and palpi black. Thorax black, levigate, with three longitudinal double rows of short black hairs, not coalescent posteriorly; lateral borders and scutellum setiferous; pleuræ, scutellum and metathorax black. Halteres wholly yellow, with a few scattered minute hairs. Abdomen nearly three times the length of the thorax, black, densely clothed with short black hair; forceps small. Coxæ and femora pale ochraceous; tibiæ ochraceous, darker than the coxæ or femora; tarsi dusky brown; tibial spurs of the fore- and intermediate-legs short; lateral spines missing (or extremely microscopic). Wings pellucid with a very pale greyish-brown tint; veins greyish-brown. Auxiliary vein pale, almost invisible just before reaching the costa, joining a little before the tip of the

marginal cross-vein; first longitudinal vein reaching the costa opposite to the base of the third submarginal cell; anterior branch of the second longitudinal vein pale, at an inclination of about 45° , its tip joining the costa at a point about $\frac{1}{3}$ of the distance from the tip of the first longitudinal vein to the tip of the second longitudinal; costal vein extending beyond the tip of the second longitudinal vein about $\frac{2}{3}$ of the distance from that to the tip of the anterior branch of the fork.

Hab.—Knapsack Gully (Skuse). October.

SECTION II.

Sub-section VI.—SCIOPHILINÆ.

Genus 13. SCIOPHILA, Meig.

Sciophila, Meigen, Syst. Besch. I. 1818, p. 245; Macquart, S. à B. Dipl. I. 1834, p. 136; Curtis, Brit. Ent. XIV. 1837, p. 641; Staeger, Kr. Tidsskr. 1840, p. 270; Zetterstedt, Dipt. Scand. XI. p. 4101; Walker, Ins. Brit. Dipt. III. 1856, p. 36; W. z.-b. G. Wien, XIII. 1863, p. 707.

Head small, flattened on the fore part, sitting deep in the thorax, of rounded oval shape owing to its high vertex. Eyes remote in both sexes, oval, a little emarginate on the inner side above. Ocelli three, arranged near one another in a triangle on the broad front, the anterior one very small. Proboscis very short, not prominent. Hypostoma more or less broad. Palpi prominent, incurved, four-jointed, the first joint very small, the second shorter than the third, the fourth as long or longer than all three together, seldom shorter than them. Antennæ projecting forwards, arcuated, those of the ♂ always longer than those of the ♀, in the latter often only as long as the head and thorax together, somewhat compressed, 2- + 14-jointed; joints of the scapus distinct, cyathiform, setose at the apex; flagellar joints cylindrical, with downy pubescence. Thorax highly arched, oval; scutellum small, semi-circular; metathorax acclivous. Halteres with an oblong club. Abdomen slender, with seven

segments, narrowed at the base, generally claviform especially in the ♂, somewhat flattened posteriorly; in the male terminating in a short forceps, in the ♀ in a short non-projecting ovipositor with two terminal lamellæ. Legs long; femora with a fringe of hair on the under side; tibiæ spurred, the fore pair with two, the hind pair with three ranges of lateral spines, of which those on the inner side are particularly short and delicate; coxæ elongated, the fore pair hairy on the front, the intermediate pair only at their apex, the hind pair with a range of setaceous hairs on the outer side; in the ♂ of some species the apex of the intermediate coxæ on the inner side has a long arcuated spine, these spines terminate in a double hook-shaped curved point, usually of a dark colour. Wings microscopically pubescent, longish-oval, with rounded off base, a little longer than the abdomen. Tip of the costal vein uniting with the tip of the second longitudinal vein at the apex of the wing, rarely before it; auxiliary vein terminating in the costa not beyond the anterior branch of the second longitudinal vein; base of the second posterior cell lying either before, under or beyond the origin of the third longitudinal vein, but always before the base of the third submarginal cell, and never so far forward as to come under the anterior branch of the second longitudinal vein; fifth longitudinal vein incomplete, usually broken off opposite the middle of the second posterior cell, sometimes disappearing before the base of the second posterior cell.

156. *SCIOPHILA PAR*, Walker.

Sciophila par, Walker, Insecta Saundersiana, Vol. I. Diptera, 1856, p. 417. (Div. a. bbbb. Ins. Brit. Dipt. III. 36).

“♂.—*Fusca*; *antennæ nigræ, basi testaceæ*; *thoracis fasciæ duæ, latera pectusque testacea*; *abdominis segmenta marginibus posticis apiceque testaceis*; *pedes testacei, tibiis obscurioribus, tarsis nigricantibus*; *alæ subhyalinæ apice sub-cinereæ, areola cubitali 1a et venæ sub-apicalis furca infuscatis, venis nigris*; *halteres testacei*.

“Brown. Palpi, two stripes on the thorax, sides, pectus, tip of the abdomen and hind borders of the segments testaceous.

Antennæ black, testaceous at the base. Tibiæ dark testaceous; tarsi blackish. Wings nearly hyaline, greyish at the tips; first cubital areolet and fork of the sub-apical vein clouded with brown; sub-costal veinlet opposite the middle of the first cubital areolet, which is of moderate size and about twice longer than broad; veins black. Halteres testaceous. Length of the body 2 lines; of the wings 4 lines.

“Van Diemen’s Land.”

Genus 17. HOMASPIS, gen. nov.

Head small, roundish, flattened on the fore part, situated deep in the thorax; front broad. Eyes ovate, a little emarginate on the inner side above. Ocelli three arranged in a curved line on the front, the middle one very small. Palpi prominent, incurved, four-jointed, first and second joints small, of about equal thickness and length, third joint almost cylindrical, more slender than the first and second, almost as long as these two joints taken together, fourth joint cylindrical, very slender, longer than the three first taken together (Pl. xxxi, fig. 9a). Antennæ projecting forwards, longer than the head and thorax taken together, 2-+14-jointed; joints of the scapus distinctly set-off, cupuliform, not setiferous at the apex; flagellar joints cylindrical, with a downy pubescence. Thorax oval, highly arched; scutellum small, almost semi-circular; metathorax steep. Abdomen long, with seven segments, in the ♂ cylindrical, with a moderate anal joint and small forceps. Legs slender* hind tibiæ spurred, and with a few very small spines along the outer side. Wings oblong-oval, moderately rounded at the base, longer than the abdomen, microscopically pubescent. Auxiliary vein complete, joining the costa immediately before the apex of the marginal cell, and at a point about one-third of the distance from the base of the wing to the tip of the costa; costal

*In the only specimen I have seen the tibiæ and tarsi of the intermediate and hind pairs of legs are unfortunately lost.

vein extending a little beyond the tip of the second longitudinal vein, and not reaching the apex of the wing; inner marginal cell short, much widened towards the apex, the apex situated midway between the sub-costal cross-vein and marginal cross-vein; marginal cell very small, almost equilateral, its base (the marginal cross-vein) situated immediately beyond the base of the second sub-marginal cell; the second sub-marginal cell almost sessile, the petiole extremely short; both branches of the fork bending posteriorly towards their tip; second posterior cell very small, its base situated a little before the middle of the second sub-marginal cell; fifth longitudinal vein incomplete, not reaching as far as the base of the second posterior cell.

157. *HOMASPIS MERIDIANA*, sp.n. (Pl. xxxi., fig. 9).

♂.—Length of antennæ..... 0.090 inch ... 2.27 millimètres.

Expanse of wings..... 0.150 × 0.045 ... 3.81 × 1.13

Size of body..... 0.150 × 0.020 ... 3.81 × 0.50

Antennæ slender, considerably longer than the head and thorax combined; joints of the scapus ochraceous-brown; flagellar joints 3 to 4 times longer than broad, deep umber brown, densely covered with a very short pubescence with a greyish reflection. Front and vertex black or deep brown, with short golden yellow hairs. Hypostoma and palpi deep brown. Thorax dull deep brown inclining to umber, densely covered with short golden yellow hairs, setiferous on the lateral borders and scutellum; pleuræ, metathorax and scutellum deep brown. Halteres rather long, slender, densely covered with a minute pale pubescence; stem yellow, club deep brown. Abdomen slender, more than twice the length of the thorax, deep castaneous brown, rather densely clothed with moderately long golden yellow hairs; forceps as wide as the terminal segment, deep brown, densely haired (Pl. xxxi., fig. 9b). Fore coxæ ochraceous; intermediate and hind coxæ deep brown, the intermediate pair slightly ochraceous at the apex, with yellow hairs; femora, tibiæ and tarsi (these joints of the

fore legs are missing in the only two specimens I have) brownish-ochraceous, the tibiæ and tarsi darker than the femora. Wings somewhat longer than the abdomen, pellucid, with a greyish tint, and the following indistinct pale brownish-grey markings: the apex entirely clouded from the tip of the posterior branch of the third longitudinal vein; immediately behind the latter is an arcuated fascia; at about an equal distance behind this is another similar but less distinct band, apparently obsolete between the anterior branch of the fourth longitudinal vein and the posterior branch of the third longitudinal vein; lastly two small more or less oblong patches occur one above the other at a similar distance behind the last band, the first reaches from the first to the third longitudinal vein, enveloping the small marginal cell, the other is on the posterior margin of the wing, bordered anteriorly by the extremity of the rudimentary fifth longitudinal vein; veins brown. Auxiliary vein joining the costa opposite the apex of the marginal cell; sub-costal cross-vein situated opposite the origin of the third longitudinal vein; first longitudinal vein reaching the costa a short distance before the tip of the posterior branch of the third longitudinal vein; marginal cross-vein situated opposite the base of the fork, and much before the middle of the first longitudinal vein; costal vein extending beyond the tip of the second longitudinal vein about $\frac{1}{2}$ the distance from that to the tip of the anterior branch of the third longitudinal; fifth longitudinal vein distinct, stopping a short distance from the margin of the wing; no sixth longitudinal vein.

Hab.—Gawler, South Australia.

Obs.—The above description was taken from two imperfect specimens of the ♂, the only members entirely absent in both being the fore-legs; however, the shape, covering and venation of the wings, and the structure of the palpi present entirely satisfactory distinctive characters, and the species deserves to be considered as a separate genus, whose nearest affinity appears to be *Lasiosoma*, Winn., on the one hand, and *Polylepta*, Winn., on the other.

Genus 29. ACRODICRANIA, gen.nov.

Head ovate, fore part flattened, situated deep in the thorax ; front broad, the anterior margin produced in a small triangle reaching to the basal joints of the antennæ. Eyes oval. Ocelli three, of unequal size, arranged in a line on the front. Palpi prominent, incurved, four-jointed ; first and second joints robust, short, the second about twice the length of the first, third joint much more slender and a little longer than the second, fourth joint very slender, not the length of the second and third taken together (Pl. xxxii., fig. 10a). Antennæ cylindrical, projecting forwards, arcuated, about as long or somewhat longer than the thorax, 2-+14-jointed ; first joint of the scapus cyathiform, about twice the length of the second, the latter cupuliform, both with short setaceous hairs at the apex, the second joint generally with one strong seta ; flagellar joints cylindrical, with very short downy pubescence. Thorax ovate, highly arched ; scutellum nearly as wide as the thorax, too flattened to be semi-circular ; metathorax highly arched. Abdomen rather robust, with eight segments, the eighth segment very short and generally hidden by the seventh ; in the ♂ flattened, claviform, with a moderate anal joint and forceps ; in the ♀ robust, flattened, terminating in a short ovipositor provided with two small terminal lamellæ. Legs strong ; femora broadly flattened ; tibiæ spurred, and having strong lateral spines on the intermediate and hind pairs ; fore tibiæ with a range of minute spines on the outer and inner side, the spines on the latter widely separated and few ; intermediate tibiæ with three ranges on the outer side and one on the inner side ; hind pair with two ranges on the outer side. Wings longer than the abdomen, moderately broad, with rounded-off base ; microscopically pubescent. Auxiliary vein joining the costa almost over or somewhat before the origin of the third longitudinal vein, united to the first longitudinal vein by a sub-costal cross-vein ; costal vein extending much beyond the tip of the second longitudinal vein, but considerably distant from the apex of the wing ; first longitudinal vein

united to the second longitudinal by the marginal cross-vein about opposite the middle of the wing; fork of the third longitudinal vein about twice the length of its petiole, very cuneiform, the tip of the anterior branch joining the margin at a point as much above the apex of the wing as that of the posterior branch is below it; anterior branch of the fourth longitudinal vein detached at the base; base of the second posterior cell situated a little before the origin of the third longitudinal vein; fifth longitudinal vein incomplete.

158. *ACRODICRANIA ATRICAUDA*, sp.n. (Pl. XXXII., fig. 10).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.065 inch | ... | 1.66 millimètres. |
| Expanse of wings..... | 0.130 × 0.045 | ... | 3.30 × 1.13 |
| Size of body. | 0.120 × 0.025 | ... | 3.04 × 0.62 |
| ♀.—Length of antennæ..... | 0.050 inch | ... | 1.27 millimètres. |
| Expanse of wings..... | 0.150 × 0.050 | ... | 3.81 × 1.27 |
| Size of body..... | 0.145 × 0.035 | ... | 3.67 × 0.88 |

♂ and ♀.—Antennæ slender; in the ♂ longer, in the ♀ shorter, than the thorax; joints of the scapus ochraceous; flagellar joints fulvous, sometimes fuliginous, the first two or three generally more or less ochraceous, their pubescence with a grey reflection. Head ochraceous-brown, vertex brown or deep brown. Hypostoma ochraceous; palpi pale ochraceous. Thorax ochraceous, almost covered by three broad longitudinal stripes (in some specimens these stripes are ochraceous-brown and little darker than the rest of the thorax, in others they are very deep brown), the intermediate stripe extending from the collare to the scutellum, the lateral ones beginning below the humeri, reaching the scutellum but not coalescent with the intermediate stripe; densely covered with short brown hairs; humeri, lateral borders and scutellum setiferous, those on the latter very long and strong; pleuræ and metathorax in the ♂ deep brown, somewhat tinged with ochraceous, in the ♀ ochraceous; scutellum ochraceous or ochraceous-brown. Halteres pale ochraceous, the apex of the club somewhat infuscated; apparently no pubescence. Abdomen

in the ♂ nearly as wide as, and about one-third longer than, the thorax, somewhat flattened; the first segment, anterior half of the second, the anterior borders of the third and fourth segments slightly, and beneath the first four segments, ochraceous; posterior half of the second, and the two following segments deep brown; fifth and sixth segments wholly black; forceps brown; in the ♀ as wide as, and nearly twice the length of, the thorax, somewhat flattened; dorsal segments sordid ochraceous, indistinctly bordered posteriorly with brown, beneath sordid ochraceous; lamellæ of the ovipositor ochraceous; ♂ and ♀ densely pubescent. Coxæ, femora ochraceous; tibiæ with their spurs somewhat smoky-ochraceous; tarsi and tibial spines almost fuliginous in a certain light. In the fore-legs the tibiæ about $\frac{3}{2}$ longer than the metatarsus (3:2). Wings considerably longer than the abdomen, pellucid, with a pale brownish-grey tint, somewhat smoky at the apex; veins brown, the costal and first and second longitudinal veins much darker than the rest; margaritaceous reflections. Auxiliary vein joining the costa somewhat before the origin of the third longitudinal vein; first longitudinal vein reaching the costa a little beyond the base of the fork; marginal cross-vein very short, thick, situated not far from the tip of the first longitudinal vein and immediately before the base of the fork; costal vein extending beyond the tip of the second longitudinal vein $\frac{2}{3}$ the distance from that to the tip of the anterior branch of the fork; tip of the anterior branch of the fork situated as much above the apex of the wing as that of the posterior branch is below it; fifth longitudinal vein indistinct, extending rather more than half-way to the margin, its basal portion scarcely visible; a very short stump of a sixth longitudinal vein.

Hab.—Sydney (Masters and Skuse). August.

159. ACRODICRANIA SETOSICAUDA, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·065 inch | ... | 1·66 millimètres. |
| Expanse of wings..... | 0·120 × 0·045 | ... | 3·04 × 1·13 |
| Size of body..... | 0·100 × 0·025 | ... | 2·54 × 0·62 |

Antennæ somewhat more slender than in *atricauda*, longer than the thorax; joints of the scapus and first four or five flagellar joints reddish-ochraceous, remainder of flagellar joints brown, their pubescence with a grey reflection. Front and vertex ochraceous, the lateral ocelli surrounded by black. Hypostoma and palpi greyish-ochraceous. Thorax dull brownish-ochraceous, with traces of three brown longitudinal stripes, the lateral ones reach the scutellum and are very distinct; densely covered with short brownish-yellow hairs, the lateral margins and scutellum with long brown setæ; pleuræ and metathorax deep brown; scutellum dull ochraceous, more or less tinged with brown. Halteres yellow, with apparently no pubescence. Abdomen wider than, and about twice the length of, the thorax, considerably flattened, dull ochraceous, the second to the fifth segment with two large deep brown spots, meeting and forming a broad band in the fourth and fifth segments in most specimens; posterior margin of the first segment slightly marked with brown; beneath dull ochraceous, the last two or three segments indistinctly marked with brownish; anal joint setiferous, ochraceous, forceps ochraceous. Coxæ, femora and tibiæ greyish-ochraceous; tarsi and tibial spurs smoky ochraceous; tibial spines almost fuliginous; the fore tibiæ and the hind femora and tibiæ slightly tipped with brown. In the fore-legs the tibiæ $\frac{1}{4}$ longer than metatarsus; the tarsi about twice the length of the tibiæ. Wings much longer than the abdomen, pellucid, with a pale brownish-grey tint; a more or less triangular brown spot, having its base in the second longitudinal vein a short distance from the tip and its apex on the anterior branch of the fork at an equally short distance from the base; a more or less distinct pale brown marking at the base of the first sub-marginal cell and an irregular streak under the fourth longitudinal vein, beginning under the base of the anterior branch and extending more than half-way to the margin of the wing; the costal and first two longitudinal veins brown, the rest pale brownish-yellow. Auxiliary vein joining the costa almost imperceptibly before the origin of the third longitudinal vein; first longitudinal vein reaching the costa opposite or almost imperceptibly

before the base of the fork; marginal cross-vein very short, rather indistinct, situated not far from the tip of the first longitudinal vein; costal vein extending beyond the tip of the second longitudinal vein about $\frac{1}{2}$ the distance from that to the tip of the anterior branch of the fork; tip of the anterior branch of the fork situated as much above the apex of the wing as that of the posterior branch is below it; rudimentary fifth and sixth longitudinal vein as in *atricauda*.

Hab.—Sydney (Masters). November (?).

160. ACRODICRANIA FASCIATA, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.040 inch | ... | 1.01 millimètres. |
| Expanse of wings..... | 0.120 × 0.045 | ... | 3.04 × 1.13 |
| Size of body..... | 0.115 × 0.030 | ... | 2.92 × 0.76 |

Antennæ slender, rather shorter than the thorax; joints of the scapus and first five or six flagellar joints ochraceous, remainder of flagellar joints black; pubescence with a grey reflection. Front, vertex, hypostoma and palpi ochraceous. Thorax dull brownish-ochraceous with three indistinct brown longitudinal stripes, the intermediate stripe very indistinct, partly visible just before the middle of the thorax, the lateral ones starting much below the humeri, terminating at the scutellum; densely covered with short brownish-yellow hairs, the humeri, lateral margins and scutellum setiferous; pleuræ ochraceous; metathorax deep brown; scutellum ochraceous-brown. Halteres wholly yellow, with apparently no pubescence. Abdomen about as wide as, and $\frac{1}{2}$ longer than, the thorax, somewhat flattened; deep brown almost black, the first segment ochraceous; densely clothed with short brown pubescence; lamellæ of the ovipositor deep brown. Coxæ and femora greyish-ochraceous; tibiæ with their spurs ochraceous-brown; tarsi smoky ochraceous; hind femora deep brown at the apex; tibial spines fuliginous. In the fore-legs the tibiæ about $\frac{1}{6}$ longer than the metatarsus; the tarsi rather more than twice the length of the tibiæ. Wings much longer than the abdomen,

pellucid, with a pale greyish-brown tint; a fuscous transverse band, very pale posteriorly, near the tip of the wing, starting from the costal margin mid-way between the tips of the first and second longitudinal veins, and on the posterior margin enveloping the tip of the anterior branch of the fourth longitudinal vein; a pale streak under the fourth longitudinal vein opposite to the tip of the rudimentary fifth longitudinal vein; veins brown, very distinct, except the tips of branches of the fork of the third longitudinal. Auxiliary vein joining the costa immediately before the origin of the third longitudinal vein; first longitudinal vein reaching the costa opposite the base of the fork; marginal cross-vein very short, situated not far from the tip of the first longitudinal vein; costal vein extending beyond the tip of the second longitudinal vein $\frac{2}{3}$ the distance from that to the tip of the anterior branch of the fork; tips of the fork very pale, almost invisible before reaching the margin, that of the anterior branch situated as much above the apex of the wing as that of the posterior branch is below it; rudimentary fifth and sixth longitudinal veins as in the two preceding species.

Hab.—Sydney (Skuse). January and December.

Genus 30. *LEIA*, Meig.

Leia, Meigen, Syst. Besch. I. 1818, p. 253; Macquart, S. à B. Dipt. I. 1834, p. 135; Curtis, Brit. Ent. XIV. 1837, p. 645; Stæger, Kr. Tidsskr. 1840, p. 232; Zetterstedt, Dipt. Scand. XI. p. 4140; Walker, Ins. Brit. Dipt. III. 1856, p. 27; Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 792.

Head ovate owing to the high vertex; flattened on the fore part, situated deep in the thorax. Eyes oval. Ocelli three, arranged in a triangle on the upper part of the broad front, almost situated on the vertex, the middle one smaller than the other two. Palpi prominent, incurved, four-jointed, the first joint small, the next two almost of equal size, the fourth as long or longer than all three together. Antennæ cylindrical, projecting forwards, somewhat arcuated, 2-+14-jointed; joints of the

scapus cyathiform, the second one setiferous at the apex; flagellar joints cylindrical, with very short pubescence. Thorax ovate, highly arched; scutellum small, almost semi-circular; metathorax high, acclivous. Abdomen slender, with six segments; in the ♂ almost cylindrical, narrowing posteriorly, with a shortened anal joint and small forceps; in the ♀ little flattened, ending in a thick ovipositor, which has two small lamellæ at its apex. Legs strong; femora, particularly the hind pair, broadly compressed; tibiæ spurred and with lateral spines, the fore pair have on their outer side a range of short spines, and a single prickle on the inner side a little above the middle, on the outer side near the range, a little below the middle, and on the apex near the spurs, these separate spines not stronger than the others; hind tibiæ towards their outer side with three ranges of very strong spines, and the intermediate pair with a single spine, which is longer than all the others, on their inner side a little above the middle. Wings longer than the abdomen, longish-oval, rounded off at the base; microscopically pubescent. Auxiliary vein reaching to about one-third of the anterior border, and not united by a sub-costal cross-vein to the first longitudinal vein; costal vein extending a great deal beyond the tip of the second longitudinal vein, but not as far as the apex of the wing; first longitudinal vein, which terminates in the costa a little beyond the middle of the anterior border, united to the second longitudinal vein by the marginal cross-vein almost opposite the middle of the wing-disk, consequently the inner marginal cell is almost half the length of the wing; third longitudinal vein bent upwards a little, reaching the margin immediately below the apex of the wing; anterior branch of the third and fourth longitudinal veins detached at the base, the former ending in the margin between the tip of the costal vein and the apex of the wing; base of the second posterior cell situated much before the origin of the third longitudinal vein; fifth longitudinal vein present only as a rudimentary root.

161. *LEIA FULVA*, Walk.

Leia fulva, Walker, Insecta Saundersiana, Vol. I. Diptera, 1856, p. 416. (Div. B. Meig. Dipt. I. p. 255; Sub-div. b. pl. 9, f. 18).

“♀.—*Fulva, robusta, subtus testacea; abdominis segmenta fasciis nonnunquam interruptis nigris; pedes testacei, tarsi fusciscentibus; alæ subcinereæ apice obscuriorēs, venis nigris basi testaceis.*”

“Tawny, stout, testaceous beneath. Abdominal segments with black bands, which are sometimes interrupted. Legs testaceous; tarsi brownish. Wings slightly greyish, rather darker at the tips; veins black, testaceous at the base. Length of the body $1\frac{1}{2}$ lines; of the wings, 3 lines.

“Van Diemen's Land.”

Genus 31. *ATELEIA*, gen. nov.

Head small, broadly ovate, nearly round, somewhat compressed on the fore part, situated deep in the thorax. Eyes ovate, entire. Ocelli three, arranged in a triangle on the front. Palpi prominent, incurved, four-jointed; first and second joints small, moderately robust, the second somewhat longer than the first, third joint more slender than the second and about one-third longer than the latter, fourth joint slender, about the length of the second and third taken together (Plate xxxii., fig. 11a). Antennæ cylindrical, tapering towards the apex, projecting forwards, arcuated, 2-+14-jointed; first joint of the scapus cyathiform, the second cupuliform, setiferous at the apex; flagellar joints cylindrical, with a very short downy pubescence. Thorax ovate, highly arched; scutellum small, almost semi-circular; matathorax high, acclivous. Abdomen in the ♂ with six segments, rather short, slender, cylindrical, the first segment narrowed; with a large anal joint supporting the forceps. Legs long and strong; tibiæ spurred and provided with lateral

spines:* a few short ones on the fore tibiae on the inner side, two rows of long spines on the outer side of the intermediate tibiae; three ranges on the hind tibiae, two ranges of long spines on the outer side and one of short ones on the inner side. Wings longer than the abdomen, oblong-oval, with rounded-off base, microscopically pubescent. Anterior branches of the third and fourth longitudinal veins both detached. Auxiliary vein joining the costa considerably before the origin of the third longitudinal vein and opposite to the base of the detached anterior branch of the fourth longitudinal vein, united at about the middle to the first longitudinal vein by the sub-costal cross-vein; costal vein extending far beyond the tip of the second longitudinal vein; first longitudinal vein joining the costa immediately before the base of the detached anterior branch of the third longitudinal vein; marginal cross-vein situated near the tip of the first longitudinal vein; anterior branch of the third longitudinal vein reaching the margin immediately above the apex of the wing; apical half of the third longitudinal bent anteriorly; fourth longitudinal vein much undulated; base of the second posterior cell situated much before the origin of the third longitudinal vein; fifth longitudinal vein incomplete, distinct.

162. *ATELEIA SPADICITHORAX*, sp.n. (Pl. XXXII., fig. 11).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.070 inch | ... | 1.77 millimètres. |
| Expanse of wings..... | 0.110 × 0.040 | ... | 2.79 × 1.01 |
| Size of body..... | 0.110 × 0.020 | ... | 2.79 × 0.50 |

Antennæ slender, longer than the head and thorax taken together; joints of the scapus and first two or three flagellar joints ochraceous, the remainder of the flagellar joints almost cinereous; flagellar joints $1\frac{1}{2}$ to $2\frac{1}{2}$ times longer than wide. Front, vertex and hypostoma deep castaneous. Palpi ochraceous. Thorax very deep castaneous, levigate, the humeri and posterior angles tinged with ochraceous-brown; rather densely covered with a short

* Probably some have been rubbed off in the only two specimens I have before me, both of which are imperfect in other respects.

yellowish pubescence ; brown setæ at the humeri, and on the lateral borders and scutellum ; pleuræ, scutellum and metathorax deep castaneous. Halteres short, fuliginous, the stem ochraceous, with very little visible pubescence. Abdomen rather slender, about twice the length of the thorax ; first three dorsal segments bright brownish-ochraceous marked laterally with a small spot of deep brown, fourth dorsal segment very deep castaneous, almost black, bordered anteriorly, one-third of the segment, with brownish-ochraceous ; first to fourth segment ochraceous beneath ; fifth and sixth segments entirely black ; the large basal portions of the genitalia ochraceous, forceps deep brown. Legs brownish-ochraceous, the hind femora deep brown on the apex ; tibial spurs ochraceous ; spines deep brown. In the fore-legs the tibiæ about $\frac{1}{4}$ longer than the metatarsus (4:3). Wings considerably longer than the abdomen, pellucid with a very pale greyish-brown tint ; two faded brown markings ; a short band begins on the costal border a short distance before the tip of the second longitudinal vein, becoming suddenly very indistinct a little before the anterior branch of the third longitudinal fork and continues on until a little below the posterior branch ; the second is a very indistinct and very small spot on the fourth longitudinal vein a little in advance of the tip of the fifth longitudinal vein ; costal and first two longitudinal veins brown, the rest ochraceous. Auxiliary vein joining the costa some distance before the origin of the third longitudinal vein and about opposite to the base of the detached branch of the fourth longitudinal vein ; sub-costal cross-vein rather pale, very thick, situated about the middle of the auxiliary vein ; first longitudinal vein reaching the costa immediately before the base of the detached branch of the third longitudinal vein ; marginal cross-vein situated a very short distance from the tip of the first longitudinal vein ; costal vein extending beyond the tip of the second longitudinal vein rather more than half the distance from that to the tip of the anterior branch of the third longitudinal ; tips of the third and fourth longitudinal veins and those of their branches very thin and indistinct, all reaching the border ; fifth longitudinal vein pale,

extending more than half-way to the posterior margin; a very short brown stump of a sixth longitudinal vein distinctly visible.

Hab.—Bowral (Masters). January.

Genus 34. *TRIZYGIA*, gen. nov.

Head small, roundish-oval, flattened on the fore-part, situated deep in the thorax. Ocelli three, of almost equal size, arranged in a triangle on the front. Eyes ovate, a little emarginate on the inner side above. Palpi prominent, incurved, four-jointed, first and second joints short, of about equal length, third as long as the first and second united, fourth slender, about the length of the three preceding (Pl. xxxii., fig. 12a). Antennæ about the length of the head and thorax taken together, projecting forwards, arcuated, 2-+14-jointed, with a short downy pubescence; joints of the scapus cupuliform, the second setose at the apex; flagellar joints cylindrical. Thorax ovate narrower and not so gibbose as in *Aphelomera*; scutellum small, nearly semi-circular; metathorax highly arched, not so high as in *Aphelomera*. Abdomen short, cylindrical, with six segments; anal joint supporting the forceps longer and narrower than the terminal abdominal segment. Legs long, moderately robust; femora compressed, the hind pair much larger and broader than the others; tibiæ spurred, the intermediate and hind pairs with moderately long lateral spines, the former with a few spines on the inner side, and the hind pair with two distinct ranges on the outer side. Wings ovate, rounded off at the base, much shorter and more rounded than in *Aphelomera*, longer than the abdomen, microscopically pubescent, the minute hairs not all of one length as in *Aphelomera*, but of two lengths, the longer ones fewer than, and three or four times longer than the others.* Costal vein extending considerably beyond the tip of the second longitudinal vein, but ending far from the apex of the wing; auxiliary vein ending in the costa beyond the marginal cross-vein,

* The smaller pubescence is even more minute than the pubescence on the wings of *Aphelomera*.

united to the first longitudinal vein by a sub-costal cross-vein; first longitudinal vein joining the costa far beyond the middle of the anterior border of the wing; marginal cross-vein situated considerably before the middle of the first longitudinal vein; third longitudinal vein starting a little before the marginal cross-vein, very little arcuated, reaching the margin far below the tip of the wing, no anterior branch; fourth longitudinal vein a little arcuated, the anterior branch detached, appearing as a short piece of a vein joining the margin; fifth longitudinal missing.

163. *TRIZYGIA FLAVIPES*, sp.n. (Pl. xxxii., fig. 12).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expanse of wings..... | 0.070 × 0.030 | ... | 1.77 × 0.76 |
| Size of body..... | 0.080 × 0.015 | ... | 2.02 × 0.38 |

Antennæ rather slender, about as long as the head and thorax taken together; joints of the scapus and first joint of the flagellum ochraceous, the remainder of the flagellar joints sooty-brown, with a greyish pubescence. Head black, with a short greyish-yellow pubescence. Hypostoma black. Palpi ochraceous-brown. Thorax deep brown, almost black, levigate, densely covered with a greyish-yellow pubescence, the lateral margins and scutellum setiferous; pleuræ, scutellum, and metathorax deep brown. Halteres wholly yellow, with apparently no pubescence. Abdomen about twice the length of, and almost as wide as, the thorax, deep brown, rather densely clothed with greyish-yellow hairs; anal joint and forceps deep brown, densely haired. Legs long, moderately robust, ochre-yellow, the tibiæ and tarsi darker on account of their dense minute pubescence; hind femora slightly brownish at the apex; tibial spurs same colour as the tibiæ and tarsi, the lateral spines brown. In the fore-legs the tarsi nearly twice the length of the tibiæ; the latter longer than the metatarsus. Wings longer than the abdomen, rounded off at the base, almost hyaline, microscopically pubescent, the hairs of two lengths, the longer ones less numerous than the smaller, the latter most numerous on the apical part of the wing; the apex of the wing, also behind the apical

half of the fourth longitudinal vein, faintly clouded with pale yellowish-brown; veins yellowish-brown; auxiliary vein, sub-costal cross-vein, and base of the third longitudinal vein paler than the rest. Tips of the costal and third longitudinal veins about equally distant from the apex of the wing; detached anterior branch of the fourth longitudinal vein starting in the wing-disk mid-way between the third and fourth longitudinal veins and a little before the tip of the first longitudinal vein, joining the posterior margin nearer the tip of the fourth longitudinal vein than that of the third longitudinal vein; fifth longitudinal vein altogether missing.

Hab.—Sydney (Skuse). September.

Genus 35. *APHELOMERA*, gen. nov.

Head small, round, the fore part flattened, situated deep in the thorax. Ocelli three, of almost equal size, arranged in a curved line high on the front. Eyes ovate, a little emarginate above on inner side. Palpi prominent, incurved, four-jointed; first and second joints somewhat robust, first joint small, second twice the length of the first, third rather longer than the first and second taken together and considerably more slender, fourth joint very slender, about equal in length to all the others taken together (Pl. xxxii., fig. 13a). Antennæ arcuated, projecting forwards, longer than the head and thorax combined, very slender, 2-+14-jointed; joints of the scapus of about equal size, cupuliform, both setiferous at the apex; flagellar joints cylindrical, with a dense short pubescence. Thorax ovate, highly arched; scutellum small, almost semicircular; meta-thorax high, acclivous. Abdomen slender, cylindrical, six-segmented, with an anal joint almost as large as the sixth abdominal segment, and small forceps. Legs long, slender; femora not so robust as the coxæ, compressed; tibiæ spurred, and the intermediate and hind pairs each with two rows of lateral spines. Wings oblong-ovate, longer than the abdomen, rounded off at the base, microscopically pubescent. Costal vein extending far beyond the tip of the second longitudinal vein, stopping a little before the apex of the wing; auxiliary vein joining the

costa a short distance before the marginal cross-vein; the humeral cross-vein very oblique; no sub-costal cross-vein; first longitudinal vein joining the costa at a point $\frac{3}{4}$ of the distance from the root of the wing to the tip of the costa; the marginal cross-vein situated very much before the middle of the first longitudinal vein, at a point about one-third of the length of the latter; third longitudinal vein detached from the second longitudinal vein, starting in the wing-disk considerably beyond the marginal cross-vein, reaching the margin much below the apex of the wing, without any trace of an anterior branch; fourth longitudinal vein joining the posterior margin before the tip of the first longitudinal vein joins the costa, the only trace of an anterior branch being an indistinct, short piece of a vein, quite detached from the fourth longitudinal vein, and joining the posterior margin a short distance in advance of it; fifth longitudinal vein only rudimentary.

164. APHELOMERA SYDNEYENSIS, sp.n. (Pl. xxxii., fig. 13).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.050 inch | ... | 1.27 millimètres. |
| Expanse of wings..... | 0.100 × 0.030 | ... | 2.54 × 0.76 |
| Size of body | 0.110 × 0.015 | ... | 2.79 × 0.38 |

Antennæ very slender, tapering towards the tip, nearly twice the length of the head and thorax combined; joints of the scapus yellowish, with short black or deep brown setæ at the apex; flagellar joints cylindrical, 3 to 5 times longer than broad, deep brown, with a dense, short, yellowish-grey pubescence. Hypostoma and front deep umber brown. Palpi yellowish-brown. Thorax deep brown, sub-nitidous, covered with a short yellowish-grey pubescence, with a few long, deep brown, setaceous hairs on the lateral borders; humeri slightly tipped with yellowish-grey; pleuræ brown, lighter than the thorax; scutellum and metathorax deep brown, the former setiferous. Halteres long, stem ochraceous, club elongate, deep brown, with a minute pubescence. Abdomen slender, cylindrical, deep brown, almost black, densely clothed with short yellowish-grey hairs; anal joint and forceps

deep brown. Legs long, slender. Coxæ and femora pale ochraceous; tibiæ cinereous; tibial spurs, lateral spines and tarsi almost fuliginous. In the fore-legs the tarsi more than twice the length of the tibiæ, the latter being almost as long as the metatarsus. Wings a little longer than the abdomen, almost hyaline, with a pale brownish tint, the veins brown; brilliantly iridescent. Auxiliary vein distinct. Costal, first longitudinal and second longitudinal veins running almost parallel to one another, the latter somewhat bent posteriorly towards the tip. Fifth longitudinal very short and indistinct.

Hab.—Elizabeth Bay, near Sydney (Skuse). November.

Obs.—I have found two ♂ specimens only of the above, both collected from windows.

Genus 42. TRICHONTA, Winn.

Mycetophila, Stæger, Kr. Tidsskr. 1840, pp. 251 and 259 (16 and 27); *Zetterstedt*, Dipt. Scand. XI. pp. 4203 and 4299 (22 and 47); *Trichonta*, Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 847.

Head of a broad oval owing to its high vertex; flattened on the fore part; situated deep in the thorax; front broad, the anterior border advanced triangularly in the middle, the apex of which reaches almost as far as the basal joints of the antennæ. Eyes circular. Ocelli large, the middle one small, situated in a small depression at the base of the frontal triangle. Palpi prominent, incurved, four-jointed; first joint small, the fourth joint longer than the second and third taken together. Antennæ slender, projecting forwards, arcuated, 2-+14-jointed; first joint of the scapus cyathiform, the second cupuliform, both setiferous at the apex; flagellar joints cylindrical, compressed from the sides, with short downy pubescence. Thorax small, oval, highly arched; prothorax hairy, without setæ on its borders; scutellum semicircular, setiferous at the apex; metathorax high, acclivous, somewhat arched. Abdomen of the ♂ with six segments, narrowed at the base, compressed from the sides, with a more or less large anal joint and forceps; in the ♀ with seven segments, narrowed

at the base, generally compressed from the sides, often cylindrical, with short, thick, coarse ovipositor, provided with two lamellæ at the apex. Legs moderately long; hind femora more flattened than the fore pair; tibiæ spurred, and with lateral spines; hind tibiæ and tarsi almost equally long, sometimes the tarsi somewhat shorter. Wings large, extending a little beyond the end of the abdomen, with a rounded off or obtusely cuneiformly narrowed base, microscopically pubescent. Costal vein extending almost imperceptibly beyond the tip of the second longitudinal vein, terminating before apex of the wing; auxiliary vein large, running parallel with the first longitudinal vein, ending, bent downwards, in the first longitudinal vein; marginal cross-vein situated before the middle of the first longitudinal vein; apex of the inner marginal cell lying over the short petiole of the second sub-marginal cell; base of the second posterior cell situated before the base of the second sub-marginal cell, sometimes even before the origin of the third longitudinal vein; fifth longitudinal vein delicate, incomplete, frequently almost missing.

165. *TRICHONTA VEGETA*, n.sp. (Pl. xxxii., fig. 14).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.050 inch | ... | 1.27 millimètres. |
| Expanse of wings..... | 0.140 × 0.050 | ... | 3.55 × 1.27 |
| Size of body..... | 0.140 × 0.030 | ... | 3.55 × 0.76 |

Antennæ about the length of the head and thorax taken together, bright brown, the first flagellar joint more than twice as long as broad. Hypostoma and palpi pinkish-yellow. Head greyish-brown, with a short golden-yellow pubescence. Thorax greyish-brown, levigate, rather densely covered with a short golden-yellow pubescence, with two indistinct longitudinal single rows of longer black hairs converging towards the scutellum where they almost meet; humeri rather deeply tipped with greyish-yellow; lateral borders and scutellum with brown setaceous hairs; pleuræ and metathorax deep brown; scutellum brown. Halteres whitish, with a very minute pubescence. Abdomen rather robust, greatly compressed from the sides, from above almost as wide as the

thorax and more than twice its length; dorsal segments deep brown, with a more or less umber tinge, each segment with a narrow border of pale greyish-yellow posteriorly, densely clothed with tolerably long hairs, underneath whitish; ovipositor and lamellæ deep brown. Fore and intermediate coxæ and femora pale greyish-yellow; hind coxæ dark brown; hind femora pale greyish-yellow, deeply tipped with dark brown. Tibiæ and spurs dusky-cinereous; tarsi darker than the tibiæ, almost fuliginous in a certain light. In the fore-legs the tarsi more than twice the length of the tibiæ; the tibiæ somewhat longer than the metatarsus. Wings as long as the whole body, rounded off at the apex, almost hyaline, deeply clouded with blackish at the apex; brilliantly iridescent. Auxiliary vein running very close to the first longitudinal vein, disappearing before joining; costal vein extending very little beyond the tip of the second longitudinal vein; marginal cross-vein situated over the middle of the petiole of the third sub-marginal cell, and slightly before the base of the second posterior cell; fifth short, distinct.

Hab.—Woronora, Illawarra district (Skuse). September.

Obs.—In Winnertz's diagnosis of this genus, that author states that the terminal joint of the palpi is longer than the second and third taken together; in this species the second and third joints are of almost equal length, the third sub-claviform, and the fourth about one-third longer than the third joint, slender, and also sub-claviform.

166. *TRICHONTA ILLÆTABILIS*, n.sp.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.060 inch | ... | 1.54 millimètres. |
| Expanse of wings..... | 0.110 × 0.040 | ... | 2.79 × 1.01 |
| Size of body | 0.100 × 0.020 | ... | 2.54 × 0.50 |

Antennæ slender, somewhat longer than the head and thorax together; joints of the scapus and first two or three flagellar joints ochraceous, the remainder of the joints brown. Head dusky brown with minute golden-yellow hairs. Hypostoma and palpi ochraceous. Thorax dull greyish-brown, humeri deeply tipped

with greyish-fulvous, densely covered with short golden-yellow hairs, lateral borders and scutellum with brown setaceous hairs; pleuræ, metathorax and scutellum light brown. Halteres yellow, with apparently no pubescence. Abdomen moderately slender, twice the length of the thorax, deep brown, the first, second and third segments with a narrow border of ochraceous posteriorly, tolerably clothed with short golden-yellow hair; anal joint supporting the genitalia about as long as the fifth and sixth abdominal segments together, brown. Coxæ and femora ochraceous, the hind coxæ tinged with brownish, and the hind femora brown at the apex; tibiæ and tarsi sordid ochraceous, the latter darker than the tibiæ, intermediate and hind tibiæ slightly tipped with brown. Tibial spurs sordid ochraceous. In the fore-legs the tarsi twice the length of the tibiæ, the tibiæ scarcely longer than the metatarsus. Wings a little longer than the entire body, rounded off at the apex, almost hyaline, the whole apex of the wing from the tip of the anterior branch of the fourth longitudinal vein distinctly clouded with brownish-grey; brilliantly iridescent. Auxiliary vein indistinctly joining the first longitudinal vein considerably before the origin of the third longitudinal vein; costal vein extending almost imperceptibly beyond the tip of the second longitudinal vein; marginal cross-vein situated over the basal half of the petiole of the third sub-marginal cell, almost in the middle; and imperceptibly before the base of the second posterior cell; fifth longitudinal vein short terminating before the base of the second posterior cell.

Hab.—Lawson (Masters). One specimen. January.

Obs.—Very closely allied to the last.

Genus 51. MYCETOPHILA, Meig.

Mycetophila, Meigen, Illig. Mag. II. 1803, p. 261; Macquart, S. & B. Dipt. I. 1834, p. 128; Stæger, Kr. Tidsskr. 1840, p. 239; Zetterstedt, Dipt. Scand. XI. p. 4174; Walker, Ins. Brit. III. 1856, p. 10; Winnertz, V. z.-b. G. Wien, XIII. 1863, p. 915.

Head somewhat longish round, compressed in the fore part, situated deep in the thorax; front broad, the anterior border elongated triangularly, which extends to the basal joints of the antennæ. Eyes oval. Ocelli two, large. Palpi prominent, incurved, four-jointed; first joint small, the others equally long, or the fourth the longest. Antennæ projecting forwards, arcuated, 2+14-jointed; joints of the scapus cyathiform, setiferous at the apex; flagellar joints cylindrical, compressed from the side, with short downy pubescence. Thorax ovate, highly arched, with a short pubescence, longer hair on the lateral margins, setiferous on the hind border; scutellum semi-circular or a shortened triangle, setiferous on the border; metathorax highly arched. Abdomen of the ♂ with six segments, of the ♀ with seven segments, more or less compressed from the side, narrowing at the base; anal joint of the ♂ generally small; ovipositor of the ♀ with two lamellæ. Legs robust; femora compressed; tibiæ spurred, the fore pair with small spines on the outer side, the intermediate pair with two ranges of strong spines on the outer side and one range of stronger or weaker ones on the inner side, the hind tibiæ with two or three ranges of short spines on the outer side; metatarsus of the hind tarsi with fine prickles. Wings a little longer than the abdomen, longish-oval, the base rounded off or more obtusely-cuneiformly narrowed, microscopically pubescent. Auxiliary vein incomplete, bent anteriorly; costal vein not extending beyond the tip of the second longitudinal vein and not reaching the apex of the wing; marginal cross-vein situated at, or somewhat beyond, the middle of the first longitudinal vein, and over the base of the second sub-marginal cell, the latter with a short petiole or sessile; base of the somewhat extended second posterior cell situated before, under or a little beyond the base of the second sub-marginal cell; the branches of the fourth longitudinal inclined towards one another at their tips; fifth longitudinal vein incomplete; rudimentary sixth longitudinal vein stout.

167. MYCETOPHILA ÆQUALIS, Walker.

Mycetophila æqualis, Walker, Insecta Saundersiana, Vol. I. Diptera, 1856, p. 415 (Div. A. Meig. Dipt. pl. 9, f. 15; Sub-div. a. Vol. VI. p. 297).

“♀.—*Nigra; antennæ basi testaceæ; thorax guttis duabus anticis et abdominis segmenta marginibus posticis testaceis; pedes testacei, femoribus basi fuscescentibus, tarsis fuscis; alæ sub-cinereæ, fusco bifasciata; halteres testacei.*

“Black, slightly pubescent. Antennæ testaceous at the base. Thorax with a minute testaceous dot on each side in front. Hind borders of the abdominal segments testaceous. Legs testaceous; femora brownish at the base; tibiæ darker than the femora; tarsi brown. Wings greyish, with two irregular brown bands, which are darkest towards the costa. Halteres testaceous. Length of the body $1\frac{3}{4}$ lines; of the wings $3\frac{1}{2}$ lines.

“Van Diemen's Land.”

168. MYCETOPHILA PROPRIA, sp.n. (Pl. xxxii., fig. 15).

| | | | | | |
|---------------------------|-------|------|-------|-----|--------------|
| ♀.—Length of antennæ..... | — | inch | ... | — | millimètres. |
| Expanse of wings..... | 0·160 | × | 0·060 | ... | 4·06 × 1·54 |
| Size of body..... | 0·160 | × | 0·030 | ... | 4·06 × 0·76 |

Antennæ lost, except the joints of the scapus; these are ochraceous, the first much longer than the second, both bristly at the apex. Head ochraceous-brown, densely covered with short golden-yellow hairs; short brown setæ round the hind border of the eyes. Hypostoma and palpi ochraceous; the joints of the latter as follows: first joint small, second rather more robust and longer, third less robust than the second and about one-fourth longer, fourth slender, somewhat claviform, almost as long as the second and third joints taken together (Pl. XXXII. fig. 15a). Thorax ochraceous-brown, densely covered with golden-yellow hairs; deep brown setæ on the lateral margins; pleuræ light ochraceous-brown; setiferous in front of the origin of the wings and above the fore coxæ; scutellum

brown, tinged with ochraceous, with four very long brown setæ; metathorax brown. Halteres yellow, with a minute pubescence. Abdomen much compressed from the sides, twice the length of the thorax; segments brown, all except the first and the last two with a narrow border of ochraceous posteriorly, the fifth and sixth segments ochraceous beneath; densely clothed with short golden-yellow hairs; ovipositor and terminal lamellæ ochraceous, pubescent. Legs robust. Coxæ and femora bright ochre-yellow; fore coxæ densely haired in front; fore femora not as wide as the coxæ, the hind pair very wide, the latter slightly tipped with brown. Tibiæ brownish-ochraceous, hind pair slightly tipped with brown, the fore pair with a few short spines on the outer side, the intermediate pair with three ranges of long spines, one on the inner and two on the outer side, the hind pair with two ranges of long spines on the outer side. Spurs brownish-ochraceous, spines brown. In the fore-legs the tarsi more than twice the length of the tibiæ, the latter rather longer than the metatarsus. Wings longer than the abdomen, rounded off at the base, pellucid, of a pale brownish-yellow tint, with two small distinct light brown spots and faint trace of a third one: the first squarish, between the first longitudinal vein and the base of the anterior branch of the third longitudinal vein, enveloping the marginal cross-vein, as much appearing in the marginal as in the inner marginal cell; the second spot indeterminate, rather paler than the last, about equal to it in size, filling up the portion of the marginal cell between the tips of the costal and second longitudinal veins, and a short distance from the tip of the latter, extending half-way across the first sub-marginal cell; a little below this starts a very pale narrow oblique spot, which continues very indistinctly almost to the anterior branch of the fourth longitudinal vein. Marginal cross-vein situated at about the middle of the first longitudinal vein, and over the base of the second sub-marginal cell, the latter sessile; base of the second posterior cell situated under the base of the second sub-marginal cell; fifth longitudinal vein not reaching the base of second posterior cell.

Hab.—Glenbrook, Blue Mountains (Masters). November.

Genus 14. BRACHYDICRANIA, gen. nov.

Head roundish, compressed in the fore part, situated deep in the thorax; front broad, the anterior border prolonged as a small triangle, which reaches to the basal joints of the antennæ. Eyes longish-round. Ocelli two, large. Palpi prominent, incurved, four-jointed; first joint small, second longer, very robust, third joint sub-clavate, about $\frac{1}{3}$ longer than second, fourth joint very slender, about equal in length to all the others united (Pl. xxxii. fig. 16a). Antennæ projecting forwards, somewhat arcuated, 2-+14-jointed; first joint of the scapus cyathiform, second much shorter than the first, cupuliform, both setiferous at the apex; flagellar joints cylindrical, somewhat compressed from the side, with dense, minute, downy pubescence. Thorax ovate, highly arched, with a short pubescence, setiferous on the lateral and hind borders; scutellum semi-circular, setiferous; metathorax steep. Abdomen slender, in the ♂ with six, and the ♀ with seven segments, narrowed at the base, cylindrical or a little compressed from the side; anal joint of the ♂ moderately large; ♀ ovipositor very short, with two small lamellæ. Legs long, slender; intermediate and hind femora rather broadly compressed; tibiæ spurred, and having lateral spines: fore pair with one distinct range of very small spines on the inner side, and a few very small spines along the outer side, intermediate pair with range of small spines on each side, hind pair with two ranges of longer spines on the outer side; metatarsus of the hind tarsi with some very minute prickles. Wings longer than the abdomen, oblong-oval, with moderately rounded base, microscopically haired.* Auxiliary vein very short, incomplete, directed towards the first longitudinal vein; costal vein not extending beyond the tip of the second longitudinal vein; marginal cross-vein situated about the middle of the first longitudinal vein and over the base of the second sub-marginal cell, the

* The microscopic pubescence on the wings of the four following species, also in *Mycetophila propria*, is arranged in longitudinal rows; I have not observed this in other species.

latter with a shorter petiole; tips of the third longitudinal fork somewhat divergent; second posterior cell short, its base situated much beyond the base of the second sub-marginal cell; the branches of the fourth longitudinal fork divergent; fifth longitudinal vein long, incomplete; sixth longitudinal stout and long.

Obs.—This genus evidently should come between *Mycetophila* Meig., and *Dynatosoma*, Winn.

169. BRACHYDICRANIA PULLICAUDA, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·050 inch | ... | 1·27 millimètres. |
| Expanse of wings..... | 0·140 × 0·050 | ... | 3·55 × 1·27 |
| Size of body..... | 0·170 × 0·025 | ... | 4·31 × 0·62 |

Antennæ tolerably slender, about as long as the thorax; joints of the scapus pale yellow; flagellar joints pale greyish-ochraceous, longer than broad, rather difficult to distinguish one from the other on account of their very dense minute pubescence. Head brownish-ochraceous, with short black hairs, and a few short setæ at the hinder border of the eyes. Hypostoma and palpi very pale ochraceous. Thorax ochraceous-brown, densely covered with a short pubescence, the lateral borders and scutellum with black setaceous hairs; pleuræ and scutellum ochraceous-brown; meta-thorax brown, the metanotum with yellowish lateral patches. Halteres yellow, with a very minute pubescence. Abdomen slender, almost cylindrical, rather more than twice the length of the thorax, densely clothed with a short pubescence; first four segments sordid ochraceous, all but the fourth marked superiorly with brown, almost the whole anterior half of the first segment brown, second segment with a triangular spot, third with an oblong spot; fifth and sixth segments brown, narrowly bordered posteriorly with sordid ochraceous; anal joint and forceps sordid ochraceous, densely haired. Coxæ pale ochraceous, the first pair densely covered in front with a short pubescence; femora and tibiæ ochraceous-brown, darker than the coxæ on account of their dense pubescence; tarsi, tibial spurs and spines dusky brown. In the fore-legs the tarsi more than twice the length of the tibiæ; the metatarsal joint

somewhat longer than the tibiæ. Wings pellucid, with a pale greyish-yellow tint, brilliantly margaritaceous; veins brown, the costal and first two longitudinal veins darker than the rest. First longitudinal vein joining the costa a little before the tip of the posterior branch of the third longitudinal vein; petiole of the second sub-marginal cell very short; tips of the branches of the fourth longitudinal as widely separated as those of the third longitudinal, all indistinct; marginal cross-vein situated about mid-way between the origin of the third longitudinal vein and the base of the second posterior cell; fifth longitudinal vein reaching almost to the base of the second posterior cell.

Hab.—Middle Harbour (Skuse). September.

170. *BRACHYDICRANIA PICTIVENTRIS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.045 inch | ... | 1.13 millimètres. |
| Expand of wings..... | 0.120 × 0.045 | ... | 3.04 × 1.13 |
| Size of body... .. | 0.120 × 0.020 | ... | 3.04 × 0.50 |

Antennæ slender, about the length of the thorax; joints of the scapus ochraceous; flagellar joints cinereous, the basal half of the first, which is much longer than the other joints, ochraceous. Front and vertex brown, with a peculiar hoary bloom when viewed in a certain light, densely covered with a minute pubescence; a few short black setæ in the hinder border of the eyes. Hypostoma ochraceous-brown; palpi ochraceous. Thorax brown, densely covered with a minute golden-yellow pubescence, and having the same hoary appearance as the head, with three indistinct longitudinal single rows of short black hairs, the lateral ones meeting at the scutellum, the intermediate one not reaching the middle of the thorax; lateral borders and scutellum setiferous; pleuræ, scutellum and metathorax deep brown, tinged with ochraceous-brown. Halteres pale yellow, with a row of minute brown hairs. Abdomen slender, more than twice the length of the thorax, densely haired, deep brown, the underside of the segments marked with ochraceous, that of the first and second segments longitudinally, of

the rest transversely, the terminal segment only slightly; ovipositor sordid ochraceous. Coxæ and femora pale yellowish, the fore coxæ pubescent in front, all the coxæ setose at the apex, the intermediate and hind pair slightly tinged with brown at the apex; hind femora with a brown longitudinal spot near the base beneath; tibiæ almost cinereous; tarsi, tibial spurs and spines almost fuliginous. In the fore-legs the tarsi rather more than twice the length of the tibiæ; the latter about the length of the metatarsus. Wings almost hyaline, brilliantly iridescent; costal and first two longitudinal veins dusky brown, the rest yellowish-brown. First longitudinal vein joining the costa somewhat before the tip of the posterior branch of the third longitudinal vein; both branches of the third longitudinal vein, and the anterior branch of the fourth longitudinal, indistinct at the tips; tips of the branches of the fourth longitudinal as widely separated as those of the third longitudinal vein; fifth longitudinal vein terminating a little before the base of the second posterior cell.

Hab.—Sydney (Masters and Skuse).

171. *BRACHYDICRANIA FUMOSA*, sp.n. (Pl. xxxii. fig. 16).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.055 inch | ... | 1.39 millimètres. |
| Expanse of wings | 0.115 × 0.040 | ... | 2.92 × 1.01 |
| Size of body..... | 0.120 × 0.020 | ... | 3.04 × 0.50 |
| ♀.—Length of antennæ..... | 0.055 inch | ... | 1.39 millimètres. |
| Expanse of wings..... | 0.120 × 0.042 | ... | 3.04 × 1.06 |
| Size of body..... | 0.130 × 0.025 | ... | 3.30 × 0.62 |

♂ and ♀.—Antennæ slender, rather longer than the head and thorax taken together; joints of the scapus ochraceous; flagellar joints brown, the very dense short pubescence with a hoary reflection. Front and vertex deep brown, densely covered with a minute golden-yellow pubescence. Hypostoma brown or ochraceous-brown; palpi ochraceous. Thorax deep brown, densely covered with a minute golden-yellow pubescence, with three indistinct longitudinal single rows of short black hairs, the lateral ones meeting at the scutellum, the intermediate one not reaching

so far; lateral borders with black setæ; pleuræ, scutellum, and metathorax deep brown, long black setaceous hairs on the scutellum. Halteres yellow. Abdomen slender, more than twice the length of the thorax, densely haired, deep brown, the segments marked beneath with ochraceous, more distinctly in the ♀ than in the ♂; in both sexes the first and second segments are marked longitudinally, in the ♂ the third and fourth segments only are distinctly transversely marked, while in the ♀ the transverse markings are also usually distinct on all the other segments; ♂ anal joint and forceps ochraceous-brown, densely haired; ♀ ovipositor very small, sordid ochraceous. Coxæ and femora ochraceous, sometimes pale, sometimes with an almost ferruginous tinge; fore coxæ covered in front with short hairs, all pairs setose and slightly tinged with brown at the apex; base of the hind femora brown, intermediate and hind pairs slightly tipped with brown at the apex; tibiæ light umber brown; tarsi, tibial spurs, and spines dusky brown. In the fore-legs the tarsi three times the length of the tibiæ; the latter shorter than the metatarsus. Wings pellucid with a slightly yellowish tint, the whole apex, from the tip of the anterior branch of the fourth longitudinal vein, clouded with pale greyish-brown, also a very slight appearance behind the fourth longitudinal vein from the tip of the fifth longitudinal vein to the wing margin; brilliantly iridescent; veins yellowish-brown. First longitudinal vein joining the costa opposite to the tip of the posterior branch of the third longitudinal vein; branches of the third longitudinal fork pale at their tips; anterior branch of the fourth longitudinal vein rather pale, particularly at its tip; fifth longitudinal vein reaching almost to the base of the second posterior cell.

Hab.—Lawson, Blue Mountains (Masters).

172. BRACHYDICRANIA ABBREVIATA, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.060 inch | ... | 1.54 millimetres. |
| Expanse of wings..... | 0.095 × 0.035 | ... | 2.39 × 0.88 |
| Size of body..... | 0.110 × 0.015 | ... | 2.79 × 0.38 |

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·055 inch | ... | 1·39 millimètres. |
| Expanse of wings..... | 0·110 × 0·040 | ... | 2·79 × 1·01 |
| Size of body..... | 0·120 × 0·020 | ... | 3·04 × 0·50 |

♂ and ♀.—Antennæ slender, longer than the head and thorax taken together; joints of the scapus ochraceous; flagellar joints brown, their very dense minute pubescence with a hoary reflection. Front and vertex black, densely covered with a minute golden-yellow pubescence; a few short black setæ on the hinder border of the eyes. Hypostoma brown; palpi ochraceous. Thorax brown, densely covered with a minute golden-yellow pubescence, with three indistinct longitudinal single rows of short black hairs, the lateral ones extending nearly to the scutellum, where they almost meet, the intermediate one reaching to about the middle of the thorax; lateral borders setaceous; pleuræ, scutellum and metathorax brown, the scutellum with a few very long black setæ and a short golden-yellow pubescence. Halteres yellow, with a minute pubescence. Abdomen moderately slender, about twice the length of the thorax, densely haired; in the ♂ deep brown, in the ♀ deep brown, each segment except the last, marked underneath with ochraceous, the first two segments longitudinally marked, the third to sixth transversely; anal joints and forceps of the ♂ ochraceous-brown, densely haired; ♀ ovipositor very short, sordid-ochraceous. Coxæ and femora ochraceous, all the coxæ with a few short setæ at the apex; tibiæ light amber; tarsi, tibial spurs and spines dusky brown, the tarsi nearly fuliginous. In the fore-legs the tarsi about $2\frac{1}{2}$ times the length of the tibiæ; the latter as long as the metatarsus. Wings almost hyaline, beautifully iridescent; costal and first two longitudinal veins deep brown, the rest yellowish-brown. First longitudinal vein joining the costa a little before the tip of the posterior branch of the third longitudinal vein; branches of the fourth longitudinal vein pale towards their tip; fifth longitudinal vein reaching almost to the base of the second posterior cell.

Hab.—Sydney (Skuse). November.

EXPLANATION OF PLATES.

PLATE XXXI.

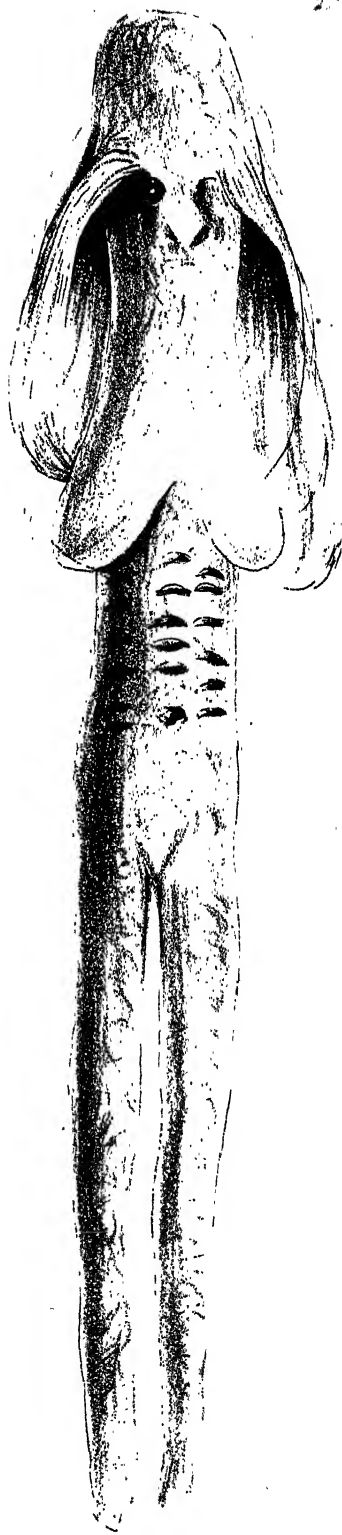
- Fig. 1. Wing of *Macrocera decorosa*.
 Fig. 2. „ „ *Mastersi*.
 Fig. 3. „ *Ceroplastus Mastersi*.
 Fig. 4. „ *Heteropterna Macleayi*, 4a, head from above, 4b, head from beneath; 4c, ♂ genitalia; 4d, fore-leg; 4e, hind-leg.
 Fig. 5. Wing of *Platyura fenestralis*.
 Fig. 6. „ „ *graphica*.
 Fig. 7. „ *Pseudoplatyura dux*, 7a, palpi.
 Fig. 8. „ *Antriadophila petulans*, 8a, palpi.
 Fig. 9. „ *Homaspis meridiana*, 9a, palpi; 9b, ♂ genitalia.

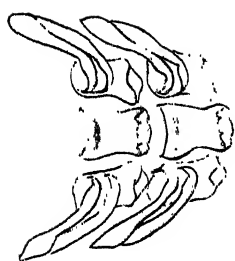
PLATE XXXII.

- Fig. 10. Wing of *Acrodicrania atricauda*, 10a, palpi.
 Fig. 11. „ *Ateleia spadiceithorax*, 11a, palpi.
 Fig. 12. „ *Trizygia flavipes*, 12a, palpi.
 Fig. 13. „ *Aphelomera Sydneyensis*, 13a, palpi.
 Fig. 14. „ *Trichonta vegeta*.
 Fig. 15. „ *Mycetophila propria*, 15a, palpi.
 Fig. 16. „ *Brachydicrania fumosa*, 16a, palpi.
 Fig. 17. Diagram illustrating the terminology for the veins and cells.
 [The right-hand column denotes the German equivalents of Winnertz (*Beit. zu einer Mon. der Pflanzmücken*, 1863)].

| Veins. | Adern. |
|--|--------------------|
| Costa (<i>v. costalis</i>). a, b, c. | Randader. |
| Transverse shoulder-vein (<i>v. trans. humeralis</i>). d. | } Hülfader. |
| Auxiliary (<i>auxiliaris</i>). e. | |
| Sub-costal cross-vein (<i>v. trans. subcostalis</i>). f. | Randfeldquerader. |
| 1st longitudinal (<i>v. long. Ima</i>). a, b. | Unterrandader. |
| Marginal cross-vein (<i>v. trans. marginalis</i>). g. | Mittlere Querader. |

| <i>Veins.</i> | <i>Adern.</i> |
|---|--|
| 2nd longitudinal (<i>v. long. 2da</i>). a, c. | Mittelader + Ellbogenader. |
| Anterior branch (<i>v. long. 2da ramus anterior</i>). h. | Brachialader. |
| 3rd longitudinal (<i>v. long. 3a</i>). k, l, m. | Mittlere Scheibenader. |
| Anterior branch (<i>v. long. 3a</i>). l, n. | Obere Scheibenader. |
| 4th longitudinal (<i>v. long. 4a</i>). a, p, q. | Hinterader. |
| Anterior branch (<i>v. long. 4a ramus anterior</i>). p, r. | Untere Scheibenader. |
| 5th longitudinal (<i>v. long. 5a</i>). s. | Achselader. |
| 6th longitudinal (<i>v. long. 6a</i>). | Afterader. |
| <i>Cells.</i> | <i>Zellen.</i> |
| Costal (<i>c. costalis</i>). A. | ————— |
| Sub-costal (<i>c. subcostalis</i>). B. | Randzelle. |
| Inner marginal (<i>c. marginalis interior</i>). C. | Schulterzelle. |
| Marginal (<i>c. marginalis</i>). D. | Vordere Cubitalzelle, or Mittelzelle. |
| 1st sub-marginal (<i>c. submarginalis 1ma</i>). E. | Hintere Cubitalzelle. |
| 2nd sub-marginal (<i>c. submarginalis 2da</i>). F. | Obere Scheibenzelle. |
| 3rd sub-marginal (<i>c. submarginalis 3a</i>). G. | Mittlere Scheibenzelle. |
| 1st posterior (<i>c. posterior 1ma</i>). H. | Untere Scheibenzelle. |
| 2nd posterior (<i>c. posterior 2da</i>). I. | Hinterzelle. |
| Axillary (<i>c. axillaris</i>). K. | Achselzelle. |





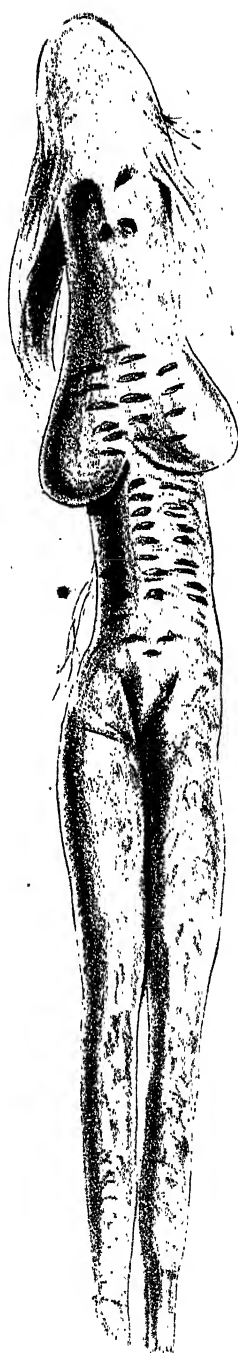
3



4



2



1

NOTES ON TWO WAX FIGURES OBTAINED FROM,
AN ABORIGINAL CAMP AT MIRIAM VALE
NEAR THE HEAD OF BAFFLE CREEK, ROCK-
HAMPTON.

By J. C. Cox, M.D., F.L.S.

PLATES XXV. and XXVI.

The figures from which these drawings are taken were presented by me to the Australian Museum in 1864, where they are still to be seen in good preservation. They were found in an aboriginal camp which had been surprised by a troop of native police for the purpose of arresting one of the tribe, who had committed some wrong on the horned property of a squatter. The whole congregation in the camp at once fled on seeing the police approach, except two small children who were unable to give any information about these figures; as seen in the drawing, they have been attached to slender sticks by means of which they were stood erect, the sticks being stuck into the ground.

They were sent to me under the supposition that they were dolls made for ornament by the younger female members of the tribe, modelled from dark soiled native bees'-wax, the honey from which had been squeezed and sucked out. On receipt of them I was surprised to find that the figures although wonderfully well-modelled, especially as to the amorous aspects of life, were both devoid of any rudiments of mouths or arms, a circumstance which the more impressed me, as I had then only recently been reading Grey's work entitled "Journals of two Expeditions of Discovery in N.W. and Western Australia during the years 1837, 1838 and 1839," in which he has recorded an account of figures of human beings he had discovered on the walls of caves, and in

which also "*none of them had mouths,*" (see p. 202, figs. 1, 2 and 4; also a figure at p. 214); and "*from the mild expression of their countenances,*" Grey concluded that the figures were those of females.

There can be no doubt about the sex of the figures now figured.

They are, as I before stated, modelled from native bees'-wax, with which has been mixed some of the oxide of iron so frequently used by them for colouring and ornamenting their weapons and bodies.

The figures measure six and eight inches long respectively, and nearly seven-eighths of an inch wide about the position of the hips; the heads are ill-formed, and have genuine uncurled human hair stuck into the wax in a kind of a fringe round the lower circumference of the head, which hangs down over the shoulders, reaching in front to near the positions of the sockets for the eyes. The eyes in each figure are conspicuous features; the right eye of one of the figures (Pl. xxv.) has a black glass bead stuck into it to more thoroughly represent the organ; the orbits are also well-defined and arched above in a very natural way, and verge into a rather carefully modelled nose which is formed with well-shaped nostrils and a tip. But here the features end; there is no mouth, no depression of any kind to indicate its existence; the chin and line of the lower jaw are also undefined, and the neck is anything but swan-like, being almost as thick as the body, and verges slopingly into the shoulders, which are not prominent in consequence.

There are no arms, and the gradual tapering of the body from the neck downwards shows that in both instances they have been intentionally omitted. The breasts are evidently intended to represent those of a female of advanced life, large and pendulous.

One of the two models (Pl. xxvi) has three rows of transverse tattoo scars represented. One centre row is composed of six of these transverse scars, the right row of six, and the left of five. These rows of transverse tattoo incisions are extended down over the front of the abdomen of both figures; there are as many as eight or nine on the figure which is tattooed over the breast, but in the

other figure (Pl. xxv) the three rows have only six transverse marks. I may mention here also that the figure which is tattooed over the chest as well as the abdomen is also tattooed in two rows almost all the way down the right leg at the back (Pl. xxvi), and there is one vertical tattoo on each side of the nates of the same model.

The female generative organs are distinctly outlined in both of the models. The legs are well tapered, and in one figure more than the other some attempt is shown to make the limbs approach at the knees and then separate slightly again in a natural manner as they descend towards the ankle. The legs in each instance do not end in feet but in pieces of wood which were used, as I before mentioned, for keeping them erect, the sticks being stuck into the ground.

Posteriorly the hair hangs down over the shoulders, and the breasts are made so large as to be seen projecting beyond the sides of the figure, giving the appearance of arms folded across the chest with elbows projecting.

The nates of the figure illustrated in Pl. xxvi. are well modelled; in the other figure not so carefully.

It is a rare thing to find figures of their species depicted by the aborigines; these models are the first and only ones of the kind I know of, although I have been endeavouring to observe their habits all my life.

Why these figures and those found by Grey have had their mouths omitted is to me a mystery, but its occurrence is significant; the features and other delicate points of the body being so carefully drawn or modelled, it is nonsense to talk about such models as these being "dolls." Can one imagine a child of any race making a doll and forming all its features but one, and that one of the most prominent of all the features? In the figures found by Grey the arms were not omitted; in these models they are as obsolete as are the mouths. What would a child of any race say to whom one presented a doll if the present were deficient in arms and mouth? What modeller of a doll would

have on two occasions omitted to place on his model the principal feature of the object which it was intended to represent, the other features and parts of his model being carefully moulded? As a rule drawings made by our aboriginal tribes are mere outline delineations of form; they do not enter into particulars as to features or other parts of the body, but in this instance they are entered into even to an exaggerated degree, and the mouth is unmistakably omitted intentionally.

I conclude, therefore, that the supposition that these figures were made as "dolls" for pastime is absurd; and that the omission of the mouth and arms was intentional, and that it is significant.

All aborigines with whom I have had a close confiding conversation, have led me to conclude that they believe in the existence of a supernatural Being of whom they were afraid or stand in awe. This mystery coming to the knowledge of Europeans, has given rise to the name "Dibble Dibble," a name imparted to the natives by Europeans with the object of terrifying them; they have no such expression in their own language. What really is their notion of this invisible Being of whom they stand in awe, the natives in my experience will not communicate. All they will tell one is that this mysterious something walks about. They have frequently expressed their belief to me that in certain localities it was to be seen, but when you question them as to its doings they will always tell you that "*he no make a noise; he only walk about.*"

It is quite possible that the omission of mouths in Grey's figures and in these which I now record really implies their belief in the non-existence of a mouth to speak with, and such being the case, it is not represented.

"He walks about," therefore he has legs; but why these figures should be without arms I am unable to conjecture, more than to suggest that, as the aboriginal's notion of this object of terror is that he can do nothing, therefore arms are also unrepresented.

THE INSECTS OF THE VICINITY OF KING'S SOUND,
N. W. AUSTRALIA.

PART III.—THE STERNOXES.

BY WILLIAM MACLEAY, F.L.S., &c.

Family BUPRESTIDÆ.

183. CHRYSODEMA SAUNDERSI, n.sp.

Elongate, greenish-black with metallic reflections, very nitid, sub-depressed. Head coarsely punctate in front, and broadly excavated and aureo-pubescent in the middle. Thorax wider a little than the length, all the angles acute, the lateral border a little sinuate, the disk smooth in the middle, and on the sides broadly and very roughly punctate and depressed, and with the exception of some smooth raised spaces densely covered with a fine golden pubescence. Elytra a little wider than the thorax and four times the length, punctate, the punctures becoming smaller to the apex, the sides bi-sinuate behind the shoulders, and serrated at the apex, which is acuminate; the colour is more of a dark purple than the rest of the body, and on each elytron are a round spot at the base near the shoulders, another smaller and more oval near the suture and a little behind the first spot, and a third large and oblong on the lateral margin, about the same line or slightly behind the second, and two vittæ on the posterior half—one near the suture, pointed behind and not reaching the apex, the others close to the lateral margin commencing near the middle and terminating some distance from the apex, all covered with a dense short golden pubescence. Beneath golden green, densely clothed with a very short golden pubescence.

Long. $13\frac{1}{2}$ lines.

This species seems to resemble *C. pistor* more than any other.

184. *BUBASTES CYLINDRICUS*, n.sp.

Cylindrical, narrow, nitid. Head brassy-black, punctate, a large roundish fovea on the forehead between the eyes. Thorax brassy-black, punctate, wider than the head, very slightly wider than long, cylindrical, bisinuate at the base, with a fovea at the base of the median line, and four smaller foveæ, two near the middle and two at the base. Elytra of a dark violet hue with purplish reflections, elongate, rather narrower than the thorax, and more than four times the length, very gradually narrowed to the apex, bidentate at the apex, rather irregularly striate, very densely punctate, the first few striæ from the suture larger and more coarsely punctate than the others. The under surface is of a brilliant cyaneous colour, with a scanty whitish pubescence about the sides.

Long. 6, lat. $1\frac{1}{2}$ lines.

I am not quite confident as to this being a *Bubastes*. I have never seen the typical and only previously known species of the genus—*B. sphenoida*, and I cannot venture to examine very minutely the only specimen I possess of the present insect.

185. *MELOBASIS LAUTA*, n.sp.

Elongate-oval, sub-depressed, golden red above, coppery red beneath, and of metallic lustre throughout. Head finely and densely punctate, a broad very shallow depression between the eyes. Thorax transverse, punctate—thinly in the middle, densely towards the sides, the base a little wider than the apex. Elytra scarcely wider than the thorax and nearly four times the length, sub-obtusely pointed at the apex, the sides serrate on the apical half, minutely and rather irregularly striate-punctate on the disk, becoming densely and rugosely punctate towards the sides, with a large cyaneous vitta extending from near the base to near the apex, and including the suture, excepting a short portion at the base.

Long. 6, lat. 2 lines.

186. *ANTHAXIA UNIFORMIS*, n.sp.

Oblong, sub-depressed, brassy-brown, sub-nitid, densely and very minutely punctate all over. Head deeply immersed in the thorax, the front vertical, flat, without impression. Thorax wider than long, the anterior angles a little advanced, the sides rounded, the base of the same width as the apex, and the median line distinctly impressed, with on each side of it at the base a deep elongate impression. Elytra about twice the length of the thorax, but scarcely so wide, parallel-sided and rounded at the apex, a depression near each shoulder, and the puncturation a little rougher towards the base than towards the apex.

Long. 2, lat. $\frac{3}{4}$ line.

187. *ANTHAXIA PURPURASCENS*, n.sp.

Oblong-oval, sub-depressed, æneous, sub-nitid, with a purplish tint on the elytra, and very minutely and densely punctate. Head covered above by the thorax and broadly impressed on the anterior part. Thorax transverse, more convex and cylindrical-looking than the last species and without either median line or basal impressions. Elytra of the width of the thorax and nearly three times the length, rounded at the apex, and the surface rather irregular with a short oblique thick keel from each shoulder.

Long. $1\frac{3}{4}$, lat. $\frac{1}{2}$ line.

188. *NEOCURIS VIRIDIAUREA*, n.sp.

Elongate-ovate, brilliant golden-green, very minutely punctate. Head without impression in front. Thorax transverse, little wider than the head, a little wider behind than in front, truncate in front, and lobed behind, and with a sinuate punctiform impression scarcely visible immediately in front of the scutellum. The elytra are of the width of the thorax, and a little more than twice the length, separately rounded at the apex, and not covering the pygidium.

Long. $1\frac{3}{4}$, lat. $\frac{3}{4}$ line.

189. STIGMODERA DUBOULAYI, Saund.

Mast. Cat. Col. Sp. 2812.

190. STIGMODERA DECIPIENS, Westw.

Syn. *S. tricarinata*, MacI., Mast. Cat. Col. Sp. 2805.

191. MERIMNA ATRATA, Cast. and Gory.

Mast. Cat. Col. Sp. 2981.

192. CHRYSOBOTHRIS INCANA, n.sp.

Elongate-ovate, depressed, of a bronzy olive colour and sub-nitid. Head rugosely and vermiculately punctate, thinly clothed with a short grayish pubescence, a shallow fovea in the middle of the vertex, and two larger ones nearer the front. Thorax wider than the head, and twice as wide as long, truncate in front, slightly and unevenly rounded on the sides and deeply bi-sinuate at the base with the apex of the basal lobe truncate; densely punctate, transversely striate and irregularly foveate. Elytra wider than the thorax and more than four times the length, deeply bi-sinuate at the base, rounded at the humeral angles, narrowed and finely serrate towards the apex, very densely and minutely punctate with four costæ on each elytron; one near the suture extending from base to apex, throwing out a short branch from near the base to the suture to about the fourth of its length; the second rising in a large fovea at the base, which is also the source of the first costa, and extending over about four-fifths of the length of the elytra, where it joins the third costa, which extends from the humeral angle to a little behind its junction with the second; the fourth rises behind the shoulder and runs nearly parallel to the lateral margin to the apex; there is a golden fovea in the middle of the second costa, and another towards the apex of the third. The abdominal segments are strongly toothed on the sides at the base.

Long. 8, lat. $2\frac{1}{2}$ lines.

193. CHRYSOBOTHRIS VIRIDIS, MacI.

Mast. Cat. Col. Sp. 2986.

194. *CISSEIS FULGIDICOLLIS*, n.sp.

Oblong, of a golden-coppery lustre, the elytra black, or purplish-black. Head strongly but not densely punctate, not very profoundly impressed in the middle. Thorax a little transverse, wider than the head, lightly bisinuate at the apex, more so at the base, the sides very slightly rounded, sub-convex, rather thinly but strongly punctate, and transversely striolate towards the sides. Scutellum bright copper colour, the disk with five or six strong punctures. Elytra of the width of the thorax at the base and four times the length, the base bisinuate, the sides narrowing a little to the apex and finely serrate, uniformly but not densely punctate and sub-rugosely punctate towards the sides, with foveæ filled with whitish pubescence distributed as follows: on each elytron at the base between the scutellum and the shoulder there is a deep transverse fovea, a little behind it is a small round one, a little behind that and near the suture is a larger round one, and behind that again, and still nearer the suture, are two or three small round ones, behind that and near the apex on the suture is a rather large round one, and in addition there are on the posterior half, and near and in a line with the sides, two round foveæ. The sides of the thorax and sides of the abdominal segments are covered with a fine dense pubescence.

Long. $5\frac{1}{2}$, lat. 2 lines.

195. *CISSEIS CRUCIATA*, Fab.

Mast. Cat. Col. Sp. 2999.

196. *CISSEIS SUTURALIS*, Hope.

Mast. Cat. Col. Sp. 3019.

197. *CISSEIS NIGRIPENNIS*, n.sp.

Elongate, the head, thorax, and scutellum of a deep red golden lustre, the elytra black, the legs and under surface metallic green. Head finely punctate, deeply impressed in front in the middle. Thorax little wider than long, sub-convex, finely punctate and transversely rugose. Scutellum finely punctate. Elytra punctate,

of the width of the thorax and thrice the length with an oblique obtuse ridge from the shoulders to the middle, and with a large depression on each elytron at the base containing two round foveæ of a silvery pubescence, three others in a line from the inner of these basal foveæ at about equal distances apart and near the suture, and two others on the posterior half and near the sides, the hinder of these two of a transverse shape. The under surface is finely punctate, a faint silvery spot on the side of each abdominal section.

Long. $3\frac{1}{4}$, lat. $1\frac{1}{4}$ lines.

198. *CISSEIS APICALIS*, n.sp.

Oblong, narrow, of a golden copper colour on the head, thorax, scutellum and basal half of the elytra, cyaneous on the apical half, and of a brilliant metallic green beneath, very densely, minutely, and sharply punctate, and transversely rugose on the entire upper surface.

Long. 3, lat. 1 line.

This species seem to be subject to considerable variety in colouring; the cyaneous apical half of the elytra is sometimes interrupted with golden markings, and sometimes a blue spot is traceable in the middle of the basal half, in this resembling *C. cruciata*, Fab., a species like it also in other respects, but differing in the coarser puncturation, broader form, and more pointed elytra.

199. *CISSEIS DIMIDIATA*, MacI.

Mast. Cat. Col. Sp. 3003.

200. *CISSEIS PURPUREOTINCTA*, n.sp.

Oblong, sub-depressed. Head brassy, densely punctate, deeply foveate in the middle. Thorax brassy, transverse, slightly lobed in front and behind, finely punctate and transversely rugose. Elytra of the width of the thorax and more than three times the length, finely and rugosely punctate, greenish at the base and apex, with

a large purplish patch occupying most of the posterior half. Beneath brilliant metallic green, very lightly punctate.

Long. 3, lat. 1 line.

201 *TRACHYS AUSTRALIS*, n.sp.

This is the first of the genus described from Australia. It is very small, of the regular trigonal form of the genus, finely punctate, of a brassy colour, and nitid with four wavy fasciæ on the elytra formed by a thin whitish pubescence.

Long. $\frac{1}{2}$ line.

202. *TRACHYS NIGRA*, n.sp.

Of rather more elongate form than the last, black, nitid, roughly punctate, the punctures large.

Long. 1 line.

203. *APHANISTICUS OCCIDENTALIS*, n.sp.

Elongate, narrow, bluish-black, sub-nitid, densely punctate. Head globular in front, and canaliculate. Thorax as long as wide, convex, and a little rounded on the sides. Elytra rather narrower than the thorax and more than three times the length, rounded and a little narrowed at the apex, punctate, each puncture with a very short whitish seta, the scutellar region more densely punctate and somewhat swollen, an inconspicuous ridge from the shoulder down the middle of each elytron. Beneath cinereo-pubescent.

Long. 2, lat. $\frac{1}{3}$ line.

Family *TRIXAGIDÆ*.

204. *TRIXAGUS ELONGATUS*, Bonv.

Mast. Cat. Col. Sp. 3034.

I am not by any means certain that the two specimens of *Trixagus* I have received from King's Sound, are identical with Bonvouloir's species.

Family *ELATERIDÆ*,

205. *AGRYPNUS MASTERSI*, MacL.

Mast. Cat. Col. Sp. 3051.

206. *LACON PORRIGINOSUS*, Cand.

Mast. Cat. Col. Sp. 3091.

207. *LACON FROGGATTI*, n.sp.

Sub-elongate, sub-depressed, dark brown, sub-opaque, clothed with short setiform scales. Head densely and coarsely punctate. Thorax longer than wide, rather flat, much rounded on the anterior third, then parallel-sided, the posterior angles rectangular and very slightly divaricate, the upper surface densely and almost vermiculately punctate, with a very slight keel along the lateral edge. Elytra about the width and two and a half times the length of the thorax, finely striate, the striæ near the sides punctate, the interstices flat and very densely punctate. Beneath of a uniform chocolate-brown, densely punctate, clothed with minute setiform scales. No tarsal grooves on the prothorax or metathorax.

Long. 8, lat. $2\frac{1}{2}$ lines.208. *LACON NIGRESCENS*, n.sp.

Elongate, flat, brownish-black, sub-nitid, punctate, and nearly glabrous. Head very slightly transversely ridged on the vertex, the antennæ reddish, the basal joint large. Thorax like that of the last species, but flatter and narrower, with the posterior angles acute, and the median line broadly and very shallowly marked on the basal half. Elytra more than twice the length of the thorax and about as wide at the base, gradually narrowed to the apex, and striate-punctate, with the interstices very minutely punctate. No tarsal groove on the prothorax.

Long. 7, lat. 2 lines.

209. *LACON RUBESCENS*, n.sp.

Elongate, brown tinged with piceous red, sub-nitid, clothed with very short pale coloured scales. Head slightly hollowed in the middle, punctate. Thorax not longer than wide, punctate, the sides serrate, much rounded in the middle, narrowed towards the base, with the posterior angles rectangular, prominent,

a little recurved and rounded, the disk convex, the gibbosity divided on the posterior half by the median line. Scutellum smooth, nitid, largely excavated at the apex. Elytra rather narrower than the thorax and more than twice the length, striate-punctate, the punctures square, the interstices very minutely punctate. No tarsal groove on the prothorax.

Long. 5, lat. $1\frac{1}{2}$ lines.

210. *LACON INCULTUS*, n.sp.

Oblong, sub-depressed, brownish-black, sub-opaque, punctate and rather thickly clothed with very short setiform yellowish scales. Head vertical in front, without depression. Thorax wider than long, the anterior angles acutely prominent, the sides rounded on the anterior third, thence straight to the posterior angles which are acute, the disk is rather finely punctate, and lightly canaliculate in the middle, with a slight transverse elevation behind the middle. Scutellum almost round, punctate. Elytra of the width of the thorax and about twice the length, punctate-striate, the punctures deeply impressed and of oblong form, the interstices minutely punctate and transversely rugose, the sides with a sinuation behind the shoulder and a broad smooth margin along the whole length. The legs are reddish, the tarsal groove on the prothorax is deeply marked.

Long. 4, lat. $1\frac{1}{2}$ lines.

211. *LACON RUFOPICEUS*, n.sp.

Sub-elongate, reddish-piceous, nitid, clothed with minute cinereous scales. Head densely punctate, a little emarginate in front, with the anterior angles a little recurved. Thorax slightly longer than wide, of normal form, but with the sides much serrated and the posterior angles dilated laterally and pointing obliquely backwards, the disk is sub-convex, rather coarsely punctate in front, more minutely and densely behind, with a small depressed smooth space at each posterior angle. Scutellum rounded behind, nitid and very sparingly punctate. Elytra of the width of the thorax and nearly three times the length, striate-punctate, the punctures

oblong, but much smaller than in the last species; the interstices flat and almost smooth, becoming rougher near the sides. An open depression but no distinct tarsal groove on the prothorax.

Long. $4\frac{3}{4}$, lat. $1\frac{1}{2}$ lines.

212. *LACON ATRICOLOR*, n.sp.

This species resembles the last in many respects, but differs in being larger and of a black colour. The thorax is less serrate on the sides, the posterior angles less acute and pointed backwards, with the smooth space at the posterior angles more depressed and redder, and the median line more impressed in the middle. The scutellum is more densely punctate.

Long. 6, lat. 2 lines.

213. *LACON LINEATELLUS*, n.sp.

Oblong, depressed, black, sub-opaque, densely and minutely punctate, with irregular spots and patches of whitish scales. Head transverse, slightly depressed in the middle, the anterior angles rounded and recurved, the apex emarginate. Thorax as wide as long, the anterior angles a little advanced but not acute, the sides roundly widened from the angles for a third of the length, then straight to the base, the posterior angles very minutely pointed backwards, the base truncate, the disk sub-convex, with three large shallow depressions at the base, and some whitish scaly patches on the sides. Elytra scarcely the width of the thorax and more than twice the length, parallel-sided to near the apex, densely and minutely striate-punctate, interstices minutely punctate, the whole interspersed with clusters of whitish scales. Under surface and legs brown, punctate, and rather densely covered with cinereous scales, the tarsi and antennæ reddish, the tarsal grooves on the prothorax distinctly defined.

Long. 5, lat. $1\frac{3}{4}$ lines.

214. *LACON SUBTILIS*, n.sp.

Elongate, black, sub-nitid, very minutely punctate. Head slightly transverse, scarcely emarginate in front, and shallowly bifoveate on the forehead. Thorax a little longer than wide, slightly

convex, the sides slightly notched above the posterior angles, which are slightly pointed backwards and not acute. Elytra as wide as the thorax, and about three times the length, very minutely striate, the interstices flat, and clothed each with two lines of very minute cinereous scales. Beneath dark brown, finely punctate and minutely scaly, the legs reddish. No tarsal groove on the prothorax.

Long. $4\frac{2}{3}$, lat. $1\frac{1}{2}$ lines.

215. *LACON RUBICUNDULUS*, n.sp.

Elongate, flat, rusty-brown, opaque, minutely and densely punctate. Head impressed on the vertex and at the apex. Thorax slightly longer than wide, the anterior angles acute, the posterior a little dilated and rectangular. Elytra about the width of the thorax and more than twice the length, striate-punctate, the interstices slightly convex, each with two or more rows of very minute cinereous scales. No tarsal grooves on the prothorax.

Long. 5, lat. $1\frac{3}{4}$ lines.

216. *LACON FOVEICOLLIS*, n.sp.

Elongate, black, nitid, finely punctate. Head with three foveæ placed transversely on the forehead, the middle one deepest. Thorax a little longer than the width, of normal form, the posterior angles very minutely pointed backwards, the base truncate, the disk not densely punctate, the median line a little impressed in the middle, with a shallow round fovea on each side between the median line and the lateral margin at a little distance from the base, and one or two punctiform impressions on each posterior angle. Elytra about the width of the thorax and over twice the length, striate-punctate, the interstices nearly flat, very minutely punctate, and rather densely covered with very short cinereous pubescence or scales. Beneath brownish, very finely punctate and minutely scaly. Without tarsal grooves on the prothorax.

Long. 5, lat. $1\frac{1}{2}$ lines.

217. *LACON MACULOSUS*, n.sp.

Sub-elongate, brownish-black, sub-opaque, variegated with patches of reddish-yellow scales. Head densely punctate, longitudinally impressed in the middle. Thorax slightly wider than long, of normal form, very minutely notched and dilated at the posterior angles, the sides minutely serrated, the disk not densely punctate, transversely sub-convex behind the middle, and marked with several spots of reddish scales, the three or four largest towards the anterior angles. Elytra of the width of the thorax and twice the length, striate-punctate—the striæ fine, the punctures rather large, the interstices narrow, flat, and minutely punctate, some irregularly reddish patches near the sides and apex, and two very fine wavy indistinct fasciæ of the same on the disk. Antennæ and tarsi reddish, a long narrow tarsal groove on the prothorax.

Long. $3\frac{1}{2}$, lat. $1\frac{1}{4}$ lines.

218. *LACON COMMUNIS*, n.sp.

Sub-elongate, sub-depressed, black, sub-nitid, finely punctate and minutely cinereo-pubescent or scaly. Head punctate and scarcely perceptibly impressed in the middle. Thorax slightly longer than wide, of normal form, transversely ridged behind the middle, the median line distinctly impressed on the posterior half, and the posterior angles minutely obliquely truncate. Elytra about the width, and twice the length of the thorax, punctate striate, the punctures small but distinct, and of square form, the interstices minutely punctate. Undersurface brown, finely punctate, minutely cinereo-squamose, legs reddish, the tarsal groove on the prothorax extending to the side.

Long. 3, lat. $\frac{3}{4}$ line.

219. *LACON ALBOGUTTATUS*, n.sp.

Black, sub-nitid, densely and minutely punctate, variegated with spots of whitish scales. Head canaliculate in front, with a transverse depression in the middle. Thorax a little longer than

wide, of normal form, the sides crenulate, the posterior angles slightly dilated and rectangular, the disk sub-convex in the middle, and transversely ridged with numerous spots of whitish scales, largest on the apex and sides. Elytra of the width of the thorax and twice the length, finely striate-punctate, the interstices very narrow and slightly raised, with whitish spots most numerous towards the apex. Beneath brownish, punctate, minutely squamose. Legs reddish, the tarsal groove on the prothorax well marked.

Long. 3, lat. 1 line. Near *L. guttatus*, Cand.

220. *LACON PARVULUS*, n.sp.

Oblong, dark brown, opaque, very minutely and densely punctate and rather densely covered with minute cinereous scales. Head emarginate in front, the angles a little recurved. Thorax about as wide as long, of normal form, the base truncate, the posterior angles acutely rectangular, the disk very slightly convex, the median line not impressed. Elytra of the width and twice the length of the thorax, very minutely striate-punctate, with the interstices narrow, flat, and densely and minutely punctate. The tarsal groove on the prothorax deeply marked.

Long. $2\frac{1}{2}$, lat. $\frac{3}{4}$ line.

221. *LACON FASCIOLATUS*, n.sp.

Very like the last species, but differing in being less minutely punctate and striate on the elytra and in having the interstices flatter and apparently wider; the chief distinction, however, is in the variegated patches of reddish and cinereous scales on the thorax and elytra, those on the latter being densest towards the apex, and putting on an appearance of faint irregular fasciæ about the middle. The tarsal groove on the prothorax rather lightly marked.

Long. 3, lat. $\frac{3}{4}$ line.

222. *ALAU\$ FUNEBRIS*, Cand.

Mast. Cat. Col. Sp. 3103.

The two specimens I possess of this insect are of smaller dimensions than given in M. Candèze's description, they have also two round black spots in the centre of the thorax, which are not mentioned by M. Candèze, in other respects they so exactly agree with the original description, that I think I am justified in regarding them as the same species.

223. *TETRALOBUS QUADRIFOVEATUS*, n.sp.

Dark brown, sub-nitid. Head punctate, deeply longitudinally impressed between the eyes. Thorax longer than wide, moderately convex, nearly truncate in front, rounded on the sides, narrowed behind, the posterior angles large, robust, and much pointed outwards and strongly keeled, the disk punctate, the median line lightly marked, except in the middle, where it is deep, and at the base where it is elevated into a keel terminating in a tubercle, and on each side of the median line there are two deep roundish foveæ, one near the middle, the other near the base. The elytra are of the width of the widest part of the thorax, and more than three times the length, parallel-sided, rounded at the apex and minutely mucronate, striate—the striæ faintly punctate, except towards the sides, the interstices broad, scarcely convex, and very minutely punctate. The prosternum is very coarsely punctate, the metasternum is pilose, the legs are reddish, as are the antennæ, which are largely pectinate from the fourth joint.

Long, 15, lat. 4 lines.

224. *MONOCREFIDIUS PRIMUS*, n.sp.

Brownish-black, sub-nitid, very minutely and densely punctate, and clothed with a very short light brown pubescence. Head transverse, a little rounded and strongly keeled at the apex, the antennæ reddish, finely pubescent, attenuated at the apex and not so long as the thorax, the second joint half the length of the

third, and that about half the length of the fourth. Thorax longer than wide, moderately convex, declivous behind, wider at the base than the apex, the posterior angles long, strong, acute, and pointed backwards, with a long carina in the middle and a short one at the inner margin; the disk is very minutely and densely punctate, the median line is only traceable slightly at one or two places. Scutellum rounded behind, sub-convex. Elytra narrower than the thorax, more than twice the length, narrowing a little to and rounded at the apex, striate-punctate, the interstices flat and extremely minutely punctate. Legs reddish.

Long. 7, lat. 2 lines.

225. *MONOCREPIDIUS SECUNDUS*, n.sp.

This species only differs from *M. primus* in being rather more elongate, the head more square, the second and third joints of the antennæ equally short, and conjointly shorter than the fourth, the thorax narrower, the scutellum a little pointed at the apex, the elytra scarcely narrower than the thorax.

Long. $7\frac{1}{2}$, lat. 2 lines,

226. *MONOCREPIDIUS TERTIUS*, n.sp.

Elongate, brown, sub-opaque, cinereo-pubescent. Head transverse, broadly rounded in front, a little longitudinally impressed in the middle, the antennæ extending considerably beyond the thorax, the third joint larger than the second, the two together little more than half the length of the fourth. Thorax elongate, gradually widening from apex to base; the posterior angles long, acute, pointed backwards, and bicarinate—one of moderate length in the middle, the other short and on the inner side; the basal lobe emarginate, with a small tooth and fovea on each side of it; the disk is sub-convex, minutely punctate, and without median line. Scutellum ovate, sub-convex. Elytra narrower than the base of the thorax and about twice the length, gradually narrowed to and sub-acuminate at the apex, finely striate-punctate, the

interstices flat and almost invisibly micropunctate. Legs yellowish-red, the lamella on the fourth joint of the tarsi small.

Long. $6\frac{1}{2}$, lat. $1\frac{4}{5}$ lines.

227. *MONOCREPIDIUS QUARTUS*, n.sp.

Reddish-brown, sub-nitid, clothed with a very short silky pubescence. Head finely punctate, rounded in front; lightly impressed in the middle of the forehead. Antennæ not reaching the base of the thorax, the second joint about half the length of the third, and both together about the length of the fourth, which is the largest of all. Thorax a little longer than wide, sub-convex, very slightly widened towards the base, the posterior angles strong, acute, bicarinate and pointing straight backwards, the base as in *M. tertius* and reddish, the disk minutely and densely punctate, the median line lightly marked behind the middle. Elytra narrower than the thorax and twice the length, tapering towards the apex which is rounded, striate-punctate—the punctures very distinct, the interstices almost flat and extremely minutely punctate. Beneath reddish, very finely punctate, the legs yellowish.

Long. 5, lat. $1\frac{1}{4}$ lines.

228. *MONOCREPIDIUS QUINTUS*, n.sp.

In colour and general appearance very like the last species, but it is of more elongate form, the second and third joints of the antennæ are very short and of equal size. The elytra are very attenuated at the apex, and are much more finely striate-punctate. The under surface and legs are reddish-yellow and finely shagreened.

Long. $4\frac{3}{4}$, lat. 1 line.

229. *MONOCREPIDIUS SEXTUS*, n.sp.

Black, sub-opaque, covered with a short pale pubescence. Head minutely punctate, very slightly impressed in the middle, the third joint of the antennæ small but larger than the second, together about the length of the fourth, which is larger than the fifth. Thorax considerably longer than wide, sub-convex, gradually widening to the apex of the posterior angles, which are long,

acute, and bicarinate; disk finely punctate, and without scarcely a trace of median line. Scutellum oval. Elytra slightly narrower than the thorax, twice the length and narrowed towards the apex, which is rounded, finely striate-punctate—the punctures small but distinct, the interstices quite flat and extremely minutely punctate. Under surface and legs brownish, minutely punctate, with a short sericeous pubescence, a deep groove on the side of the prothorax covered by the lateral margin of the pronotum.

Long. $5\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

230. *MONOCREPIDIUS SEPTIMUS*, n.sp.

Black, sub-nitid, thinly pubescent. Head very minutely punctate, scarcely impressed in front, antennæ reddish-yellow, the second and third joints very short and nearly equal, the apical joint elongate-oval. Thorax much longer than wide, scarcely wider than the head at the apex, and slightly widening to the apex of the posterior angles, which are acute, pointed backwards, and bicarinate; the puncturation is dense and very minute. Elytra about the width of the thorax at the base and more than twice the length, a little narrowed and rounded at the apex, striate-punctate—the punctures small but distinct, the interstices flat and very minutely punctate. Beneath brownish-red, minutely punctate, with a short silky pubescence; legs yellow, rather slender; the lamella of the fourth joint of the tarsi small.

Long. 4, lat. $\frac{2}{3}$ lines.

231. *MONOCREPIDIUS OCTAVUS*, n.sp.

Elongate, reddish-brown, sub-nitid, rather densely clothed with a very short silky pubescence. Head very minutely punctate, slightly impressed in the middle, the eyes large and prominent, the antennæ yellowish-brown, the second and third joints very short, the following ones very serrate, the apical elongate and slender. Thorax much longer than wide, sub-convex, a little wider at the base than at the apex, the posterior angles acute and pointed backwards, bicarinate and not long, the retuse portion of

the base of a reddish colour, the median line lightly marked near the base, the whole very minutely punctate. Scutellum ovate, sub-convex, reddish. Elytra about the width of the thorax and twice the length, rounded at the apex, and slightly narrowed, finely striate-punctate, the interstices very minutely punctate. Beneath of a paler reddish-brown than above.

Long. $4\frac{1}{4}$, lat. $\frac{4}{5}$ line.

232 MONOCREPIDIUS NONUS, n.sp.

Elongate, narrow, black, sub-nitid, very sparingly and minutely punctate, transverse, sub-depressed in the middle. Antennæ reddish, the third joint a little longer than the second, and the fourth longer than the fifth. Thorax longer than wide, and wider at the base than at the apex, the posterior angles long, acute and bicarinate, the outer carina long and curved a little outwards on its anterior portion, the whole very minutely punctate. Elytra narrower than the thorax and more than twice the length, much narrowed to the apex, which is minutely emarginate through the elytra being separately attenuated and rounded, finely striate-punctate, the interstices rather flat, and almost imperceptibly punctate. Beneath reddish-brown with a short silky pubescence, legs paler.

Long. 5, lat. 1 line.

233. MONOCREPIDIUS DECIMUS, n.sp.

Oblong, brown, thorax red, sub-opaque, covered with a very short dense silky pubescence. Thorax a little longer than wide, almost parallel-sided, the posterior angles acute, projecting backwards, and slightly bicarinate, no trace of median line. Elytra rather narrower than the thorax and over twice the length, nearly parallel-sided, the apex conjointly rounded, finely but distinctly punctate-striate, the interstices sub-convex and very minutely punctate. Legs reddish-yellow.

Long $2\frac{1}{4}$, lat. $\frac{1}{2}$ line.

234. *ELATER LONGIUSCULUS*, n.sp.

Elongate, sub-depressed, brown, opaque, densely punctate and closely clothed with a very short scale-like pale pubescence. Head without impression, slightly and broadly rounded in front. Thorax longer than wide, canaliculate, a little emarginate at the apex, widening a little from that to the posterior angles, which are rather long, acute, pointed backwards and somewhat recurved, with one long carina, slightly curved outwards anteriorly. Scutellum square, slightly rounded at the base. Elytra of the width of the base of the thorax at the base, and a little over twice the length, gradually narrowed from thence to the apex which is conjointly rounded, striate-punctate, the interstices nearly flat and densely punctate. Legs and antennæ yellowish, the latter short, slight, the third joint as long as the fourth.

Long. $6\frac{1}{2}$, lat. $1\frac{3}{4}$ lines.

235. *ELATER CINNAMOMEUS*, n.sp.

This species resembles the last in every respect, except in size and colour, the latter being of a uniform opaque cinereous, and in having the interstices between the striæ of the elytra, convex.

Long. $3\frac{1}{2}$, lat. $\frac{3}{4}$ line.

236. *ELATER INCONSPICUUS*, n.sp.

Differs from the last two species only in being entirely of an opaque brown above, with very minute setæ and scales, and in having the elytra less acuminate towards the apex.

Long. 4, lat. 1 line.

237. *CRYPTOHYPNUS DIMIDIATUS*, n.sp.

Very like *C. variegatus*, brown, sub-opaque, densely clothed with minute yellowish, whitish, and silvery scales. Thorax a little longer than wide, convex, rounded on the sides, the posterior angles very acute, two deep impressions on the base on each side of the basal lobe. Elytra of the width of the thorax, less than twice

the length, striate-punctate, of a reddish-yellow colour, with a brown fascia behind the middle, and two spots of the same colour near the apex.

Long. 2, lat. $\frac{1}{2}$ line.

238. *CRYPTOHYPNUS SEMIFASCIATUS*, n.sp.

Very like the last, but of a dark brown colour, the basal impressions on the thorax large, long and oblique, the elytra with the base, a broad median fascia not meeting at the suture, another similar fascia towards the apex, and a spot of the same near the apex common to both elytra of a dull golden yellow.

Long. $1\frac{3}{4}$, lat. $\frac{1}{2}$ line.

239. *CARDIOPHORUS FROGGATTI*, n.sp.

Black, sub-nitid, thorax red. Head convex, minutely punctate. Thorax sub-convex, punctate, larger than wide. Elytra scarcely the width of the thorax at the base, and twice the length, gradually narrowed to the apex, almost nitid, striate-punctate, with a small yellow fascia in the middle, not reaching the side or suture.

Long. 2, lat. $\frac{1}{2}$ line.

240. *CARDIOPHORUS FASCIOLATUS*, n.sp.

Very similar to the last species but entirely black, and a little less nitid, the fascia on the elytra smaller and of a paler yellow.

Long. 2, lat. $\frac{1}{2}$ line.

241. *CARDIOPHORUS QUADRIMACULATUS*, n.sp.

Of broader form than *C. Froggatti*, entirely black, sub-nitid, the thorax more convex, and the elytra less attenuated at the apex and not twice the length of the thorax. Each elytron has a large roundish orange spot near the base, and another more oblong near the apex.

Long. $1\frac{3}{4}$, lat. $\frac{1}{2}$ line.

There are eight other minute species of Elateridæ in the collection, which I am unable to place exactly in the absence of duplicate specimens for examination.

LEMNACEÆ OR DUCK WEEDS.

BY W. WOOLLS, PH.D., F.L.S.

I think that the order of *Lemnaceæ* has not been fully investigated in N. S. Wales, and that more diligent observation will reveal species which have hitherto escaped the notice of collectors. As the order consists of small floating plants, some with, and some without roots (usually found in ponds or stagnant waters, or by the side of rivers and creeks), such objects may easily be overlooked or regarded as fragments of larger aquatic plants. Mr. Bentham and Baron Mueller (*Flora Aust.* Vol. VII. p. 161), have arranged the species in two genera, *Wolffia* and *Lemna*, the former being of the simplest form and destitute of any fibres or roots, and the latter rather larger and emitting from its under surface one or more fibres or roots. Sometimes the whole surface of a pond is covered by the larger species of *Lemna*, and from them assumes a bright green appearance; but *Wolffia* is not so common, and occurs generally amongst other floating weeds, or is seen as green, somewhat globular, specks on the surface of still waters. When Vol. VII. of the *Flora* was published, *Wolffia* had not been found in N. S. Wales, but the writer of this paper collected it subsequently in a lagoon near Richmond. This species was referred by Mr. Bentham to *W. arrhiza* (Wimm; Hegelm.), a species common to Europe and India, and found of late years in Britain; but Baron Mueller considers it distinct from that species, and in his "Census of Australian Plants," calls it *W. Micheli* (Schleid.). In a plant so small (the frond being only half a line in diameter) there is much difficulty in examining the fructification and hitherto that of the Australian species has not been ascertained, so that even now there may be some doubt as to its specific name. In the European species, which differs somewhat in size and

appearance from the Australian one, the little flowers burst from a cavity on the upper surface of the frond without any spathe or bract, revealing a solitary anther, and a short style with a broad stigma.

Of the genus *Lemna*, the Baron gives for Australia five species, three of which, *L. trisulca* (Linn.), *L. minor* (Linn.), and *L. gibba* (Linn.), have only one root or fibre; whilst *L. oligorrhiza* (Kurz), which the writer collected in Parramatta, has five roots or more, and *L. polyrrhiza* (Linn.) a cluster of many. Three species are recorded from Port Jackson, one from W. Australia, and one from some part of N.S. Wales not specified. In *Lemna* the flowers issue from a fissure in the margin of the frond, the anthers have two distinct cells, and the style is generally short. Two species of the genus are described shortly in R. Brown's *Prodomus*; the others have been discovered of late years, but much remains to be learned respecting their peculiarities and distribution. Persons desirous of studying these minute plants should collect them in some suitable vessel with the water in which they are found, and transfer them to an ordinary tumbler for careful examination. Some of the species possess extraordinary vitality. They will keep alive and grow for some time, so that a good opportunity is afforded for observing the mode and time of flowering, as well as the marks which distinguish one species from another. Some writers have noticed the relationship of *Lemnaceæ* to *Cryptogams* (see *Plantes Cryptogames du Nord* by Desmazières), and others have recognised their affinity with the *Arum* family (Sach's *Text Book of Botany*). Brown placed them provisionally with *Hydrocharideæ*, but now they are regarded as a distinct order. Whilst the simplest of all phenogamous plants, they occupy an important though humble place in the economy of nature. Some of the species afford nourishment to ducks and geese, as well as protection to various kinds of infusoria, and, like other green plants, convert carbonic acid gas into air adapted to respiration. This is said especially of *L. minor*, which in some seasons increases in a surprising manner,

and forms dense masses on the surface of ponds. The writer noticed this peculiarity on one occasion in a pond at Richmond, but the phenomenon is much more frequent in Europe, where the species is said to purify the unwholesome air of marshy places by exhaling oxygen during daylight. So far as Australia is concerned, the order requires further observation, but as some of the species can only be determined by a powerful microscope, the study of them is attended with difficulty.

ON TWO INSTANCES OF COLOUR VARIATION IN BUTTERFLIES.

BY A. SIDNEY OLLIFF, F.E.S.

The two butterflies which I venture to bring before the Society's notice this evening illustrate the remarkable degree of variation to which the colour and markings of the lepidoptera are liable, even in those species which are commonly regarded as the most constant. The first of these is a specimen of what I believe to be the well-known *Pyrameis cardui* or "painted-lady," a species which, with the exception of the valley of the Amazons and certain parts of South America, is found throughout the world. Contrary to the general rule of wide-ranging and much diffused species, *P. cardui* is usually very constant in its larger markings, and, therefore, the singular aberration now described is of some interest. The specimen was captured some years ago by Mr. G. Masters at Bombala, New South Wales, and is remarkable for the absence of certain wing-markings and other characters which may be summed up as follows:—The ground colour is of the usual salmon-red, inclining to orange-ochreous, varied with black markings, but the transverse discal markings which are always present on the forewing in typical *P. cardui*, between the median vein and the hind-margin, are entirely wanting; the hind-marginal band is broader towards the inner angle, the white spots on the apical portion of the wing being disposed as in the ordinary form; the hindwing has the costal and hind-margins rather broadly blackish, and the disc, which is of the usual salmon-red colour, without markings; parallel to the hind-margin is a row of moderately large white spots, situated between the veins, of which the one nearest the inner angle is ornamented with a few blue scales; the fringe of both wings (as in the typical form) is alternately black and white. Beneath the forewing corresponds with the upperside in the absence of the discal markings; whitish externally suffused with yellow-ochreous, a conspicuous white marking at the end of the discoidal cell, bordered internally and externally by a bold black

spot ; two small spots near the apex and the hind-marginal border yellow-ochreous. Hindwing whitish, suffused with yellow-ochreous near the costal margin, with the base and two transverse spots, one on the cell and one beyond it, dark brown ; near the hind-margin are two white-centred spots ; hind-margin broadly bordered with yellow-ochreous.

At the time this specimen was captured Mr. Masters saw other, and, as he believes, similar butterflies, but as he was without a net he was unable to secure them. This *Bombala* example—for which I would suggest the varietal name *P. suffusa*—bears a remarkable resemblance in the markings of the upperside to a variety bred by Mr. J. A. Clark from a larva found on the banks of the River Lea, near London, which is figured in the 'Entomologist' for April, 1880. Like the specimen just described, this variety has the ordinary hind-marginal series of spots represented by small white dots. Now, it is well-known that the dominant Australian form of *P. cardui* has the three lower spots of this series centred with blue scales as pointed out by Prof. McCoy, who on this account suggested for it the name of *P. Kershawi* to distinguish it from the typical form in which these spots are black, but I believe it is not generally known that these blue spots are occasionally much obscured in Australian specimens, and that cases have occurred in which European examples have these spots blue-centred. Such a specimen from the New Forest was exhibited at the meeting of the Entomological Society in October, 1884, by Mr. Jenner Weir, who called attention to its similarity to the Australian form *P. Kershawi*.* I myself found a second specimen which possessed these blue-centred markings on the sand dunes near the "gates" of the Rhine, at Katwijk, in Holland, during the autumn of 1883. If these specimens had been caught in this country they would undoubtedly have been regarded as *P. Kershawi*, and passed without comment. In view of these facts, I think the conclusion is that no constant difference obtains between the Australian and

*Cf. Proc. Ent. Soc. Lond., 1884, p. xxvii.

European forms of this insect, and that the Australian form—for which it may be convenient to retain the designation *P. Kershawi* as a varietal name—must be regarded as a local form, or at most as a geographical race, using the terms in the sense defined by Mr. Wallace.



The second instance of variation is the case of a specimen of *Papilio erictheus*, a butterfly peculiar to the Australian sub-region, which was found by the late Mr. A. W. Scott, at Ash Island, in the Hunter River. In this specimen the first four of the brick-red spots on the hindwing are enlarged to more than four times their usual size, thus giving the insect a very singular appearance. The fifth spot is about twice and the sixth nearly three times the usual size; both these latter spots have the internal patch of blue scales, but they are entirely absent from the other portions of the wing. The accompanying illustration shows, clearly enough, the size and position of these brick-red spots; in colour the specimen does not vary from the typical form.

NOTES AND EXHIBITS.

Dr. Cox exhibited specimens of the under-mentioned 30 species of Land and Fresh-water Mollusca, collected by Mr. C. W. Musson, F.L.S., in the neighbourhood of Narrabri, N.S.W., and he pointed out the interest attaching to several of them from the stand-point of geographical distribution :—

1. *Unio Angasi*, Lea.
Hab.—Namoi River, 15 miles S.E. of Narrabri.
2. *Unio ambiguus*, Parreyss.
Hab.—From a lagoon near Narrabri.
3. *Unio Australis*, Lamarck.
Hab.—Namoi River, near Narrabri.
4. *Corbicula minor*, Prince.
Hab.—Namoi River, Narrabri.
5. *Vivipara sublineata*, Conrad.
Hab.—Namoi River at Walgett.
6. *Ancylus australicus*, Tate.
Hab.—On water plants in lagoons at Narrabri.
7. *Melania Balonnensis*, Conrad.
Hab.—Narrabri Creek and Namoi River, Narrabri.
8. *Limncea Lessoni*, Deshayes.
Hab.—Lagoons at Narrabri.
9. *Gabbia australis*, Tryon.
Hab.—Swamps at Narrabri.
10. *Hydrobia Brazieri*, E. A. Smith.
Hab.—Narrabri Creek.
11. *Planorbis Macquariensis*, E. A. Smith.
Hab.—Bullawa Creek, Narrabri.
12. *Planorbis Brazieri*, Classon = *P. fragilis*, Brazier.
Hab.—On water-weeds, Narrabri Creek.

13. *Physa multistrigata*, Tate.
Hab.—On stones in Bullawa Creek, Narrabri.
14. *P. Brazieri*, E. A. Smith.
Hab.—Swamps near Angledool, W. Narrabri River.
15. *P. Lessoni*, E. A. Smith.
Hab.—Lagoons, Narrabri.
16. *P. sp.*
Hab.—Narrabri River.
17. *Succinea eucalypti*, Cox.
Hab.—Under bark in paddocks, Narrabri.
18. *S. strigata*, Pfr.
Hab.—Under logs at Narrabri.
19. *S. strigillata*, Adams & Angas.
Hab.—On logs in paddocks at Narrabri.
20. *Vertigo Strangei*, Pfr.
Hab.—Under stones at the Little Mountain, Narrabri.
21. *V. Rossiteri*, Brazier.
Hab.—Under logs in paddocks at Narrabri.
22. *Bulinus (Chondrula) Adelaide*, Adams & Angas.
Hab.—Under stones, Little Mountain, Narrabri.
23. *Bulinus (Opeas) Tuckeri*, Pfr.
Hab.—Narrabri.
24. *Helix mortis* (?) Cox.
Hab.—Under logs in paddocks, Narrabri.
25. *H. Mussoni*, Cox.
Hab.—Under logs at Narrabri.
26. *H. Clio*, Cox.
Hab.—Under logs at Narrabri.
27. *H. Hebe*, Cox.
Hab.—Under logs at Narrabri.
28. *H. Dora*, Cox.
Hab.—Under logs at Narrabri.

29. *H. Liverpoolensis*, Brazier.

Hab.—In earth under logs at Narrabri.

30 *H. Strangei*, Pfr.

Hab.—Under logs on the mountains near Narrabri.

Also the following well-preserved Carboniferous fossils from the Goulburn River, a tributary of the Hunter:—

Spirifera Tasmaniensis, Morris; *S. duodecimcostata*, McCoy; *S. convoluta*, Phillips; *Platyschisma oculus*, Morris; *Productus brachythcerus*, Sowerby; *Stenopora crenita*, Lonsdale.

Mr. Brazier exhibited the two wax figures of Aboriginal women described by Dr. Cox in his paper.

Professor Tate called the attention of the Meeting to a new Marsupial animal recently received at the Adelaide Museum from Alice Springs, Central Australia, and of which a detailed account by Mr. Zietz of the S. A. Museum, will shortly be given. The specimen had been sun-dried and salted, and therefore was not in first-rate condition, but from such observation as was possible at the time the following characters were determinable. In appearance the animal somewhat resembles the Cape-mole (*Chrysochloris*); its teeth and fore-limbs indicate that it is insectivorous and a burrower, and though no marsupial bones were observed in a cursory examination, the marsupial characters of the creature were shown by the presence of marginal folds bounding the lactiferous surface, in which, and in other characters also, is implied some affinity to the Monotremes. The animal is evidently a rare one, as it was only the second specimen known, on the testimony of the blacks, during sixteen years.

In reference to Dr. Woolls' paper Professor Tate pointed out that in it South Australia had not been credited with any members of the Lemnaceæ, whereas most of the species referred to had already been recorded from that colony.

Mr. Whitelegge exhibited specimens of Medusæ—*Aurelia cerulea* (?)—from Mossman's Bay, killed in a saturated solution of alum, showing the excellent results of that mode of preservation.

In response to a request, the following list of the plants collected by Mr. Froggatt in N.W. Australia (*antea*, pp. 335 and 425), was communicated by Mr. Fletcher:—

NYPHÆACEÆ, *Nymphaea stellata*, Willd.: MENISPERMEÆ, *Tinospora smilacina*, Benth.: CAPPARIDEÆ, *Cleome tetrandra*, Banks; *C. viscosa*, Linn.: VIOLACEÆ, *Hybanthus enneaspermus*, F.v.M.; *H. suffruticosus*, F.v.M.: ELATINEÆ, *Bergia pedicellaris*, F.v.M.: MELIACEÆ, *Melia Azedarach*, Linn. (var.): MALVACEÆ, *Abutilon* sp.; *Hibiscus microchloenus*, F.v.M.; *H. tiliaceus*, Linn.: STERCULIACEÆ, *Brachychiton diversifolium*, R.Br.; *Melhania incana*, Heyne; *Melochia pyramidata*, Linn.; *Waltheria indica*, Linn.: TILIACEÆ, *Triumfetta plumigera*, F.v.M.; *Corchorus sidoides*, F.v.M.: EUPHORBIACEÆ, *Euphorbia* sp.; *Phyllanthus* sp.; *Sebastiania chamelaea*, J.M.: URTICACEÆ, *Celtis strychnoides*, Planchon; *Pouzolzia Indica*, Gaudichaud: SAPINIDACEÆ, *Atalaya hemiglauca*, F.v.M.; *Dodonaea lanceolata*, F.v.M.; *D. viscosa*, Linn.; *D. polyzyga*, F.v.M.; *Distichostemon phyllopterus*, F.v.M.: PLUMBAGINEÆ, *Plumbago Zeylanica*, Linn.: PORTULACÆ, *Claytonia uniflora*, F.v.M.; *C. (Calandrinia) polyandra*, F.v.M.: *C.* sp.; CARYOPHYLLÆ, *Polycarpaea longiflora*, F.v.M.; *P. corymbosa*, Lam.: AMARANTACEÆ, *Gomphrena canescens*, R.Br.; *G.* sp.; *Alternanthera* sp. near *A. decipiens*, Benth.; *Ptilotus Macleayi*, n.sp. F.v.M.; *P. corymbosus*, R.Br.; *P. spicatus*, F.v.M.; *P. exaltatus*, Nees; *P. gracilis*, Poiret; *P.* sp.: SALSOLACEÆ, *Dysphania plantaginella*, F.v.M.; FICOIDEÆ, *Trianthema oxycalyptra*, F.v.M.; *Mollugo Glinus*, A. Richard: NYCTAGINEÆ, *Boerhaavia diffusa*, Linn.: LEGUMINOSÆ, *Crotalaria retusa*, Linn.; *C. Cunninghamii*, R.Br.; *C. medicaginea*, Lam.; *Lotus Australis*, Andrews; *Psoralea patens*, Lindley; *Indigofera linifolia*, Retz.; *I. enneaphylla*, Linn.; *I.* sp.; *Tephrosia* sp.; *Sesbania grandiflora*, Persoon; *S. Aegyptiaca*, Persoon; *S. aculeata*, Persoon; *Erythrina vespertilio*, Bentham; *Cajanus (Atylosia) cinereus*, F.v.M.; *C.* sp.; *Cassia notabilis*, F.v.M.; *C. mimosoides*, Linn.; *C.* sp.; *Neptunia monosperma*, F.v.M.; *Acacia Sentis*, F.v.M.; *A. impressa*, F.v.M.; *A. flavescens*, Cunn.; *A. drepanocarpa*, F.v.M.; *A. doratowylon*,

Cunn. ; *A. sp.* : ONAGREÆ, *Ludwigia parviflora*, Roxburgh : SALICARIÆ, *Rotala diandra*, F.v.M. ; *Ammannia multiflora*, Roxburgh ; COMBRETACEÆ, *Terminalia sp.* ; *Gyrocarpus Jacquini*, Roxburgh ; MYRTACEÆ, *Calycotrix microphylla*, Cunn. ; *C. conferta*, A. Cunn. ; *Melaleuca alsophila*, A. Cunn. ; *M. Leucadendron*, Linn. ; *Barringtonia acutangula*, Gaertner ; *Careya Australis*, F.v.M. : UMBELLIFERÆ, *Didiscus glandulosus*, F.v.M. ; *D. hemicarpus*, F.v.M. ; SANTALACEÆ, *Santalum lanceolatum*, R.Br. : LORANTHACEÆ, *Loranthus acacioides*, A. Cunn. : PROTEACEÆ, *Persoonia falcata*, R.Br. ; *Grevillea Wickhami*, Meissner ; *G. refracta*, R.Br. ; *G. mimosoides*, R.Br. ; *Hakea arborescens*, R.Br. : THYMELEÆ, *Pimelea punicea*, R.Br. ; *P. sp.* : RUBIACEÆ, *Opercularia vaginata*, Labill. ; *Spermacoce sp.* ; COMPOSITÆ, *Calotis brevisetia*, Benthams ; *Blumea sp.* ; *Pluchea tetranthera*, F.v.M. ; *P. Eyrea*, F.v.M. : *Sphaeranthus Indicus*, Linn. ; *Pterocaulon sp.* ; *Gnaphalium Indicum*, Linn. ; *Moonia trichodesmoides*, Benthams ; *Wedelia asperrima*, Benthams ; GOODENIACEÆ, *Goodenia sepalosa*, F.v.M. ; *G. lamprosperma*, F.v.M. ; *Vellea panduriformis*, A. Cunn. ; *V. discophora*, F.v.M. : GENTIANÆ, *Erythraea australis*, R.Br. : APOCYNÆ, *Wrightia saligna*, F.v.M. : CONVULVACEÆ, *Ipomoea sp.* ; *Convolvulus parviflorus*, Vahl ; *Breweria media*, R.Br. ; *B. media*, (var.) ; *Evolvulus linifolius*, Linn. : SOLANACEÆ, *Solanum sp.* : SCROPHULARINÆ, *Stemodia lythrifolia*, F.v.M. ; *S. sp.* ; *Buchnera sp.* ; HYDROPHYLLEÆ, *Hydrolea Zeilanica*, Vahl : ASPERIFOLIÆ, *Ehretia saligna*, R.Br. ; *Heliotropium ovalifolium*, Forskael ; *H. bracteatum*, R.Br. ; *H. tenuifolium*, R.Br. ; *H. paniculatum*, R.Br. ; *Pollichia Zeylanica*, F.v.M. : VERBENACEÆ, *Callicarpa cana*, Linn. ; *C. lanceolatum*, F.v.M. (var.) ; *C. floribundum*, R.Br. ; *C. sp.* ; *Vitex glabrata*, R.Br. : TACCACEÆ, *Tacca pinnatifida*, Forster : AROIDEÆ, *Typhonium angustilobum*, F.v.M. : ALISMACEÆ, *Alisma oligococcum*, F.v.M. : PONDERIACEÆ, *Monochoria cyanea*, F.v.M. : COMMELINÆ, *Aneilema gramineum*, R.Br. : CYPERACEÆ, *Fimbristylis sp.* : GRAMINEÆ, *Panicum sp.* ; *Setaria sp.* ; *Pennisetum Arnheimicum*, F.v.M. ; *Xerochloa imberbis*, R.Br. ; *Perotis rara*, R.Br. ; *Andropogon sericeus*, R.Br. ; *A. annulatus*, Forskael ; *A. exaltatus*, R.Br. ;

A. sp.; *Anthistiria membranacea*, Lindley; *Eriachne squarrosa*, R.Br.; *E. glauca*, R.Br.; *E. obtusa*, R.Br.; *E. sp.*; *Danthonia sp.*; *Eleusine polystachya*, F.v.M.; *E. cruciata*, Lamarck; *Eragrostis tenella*, Beauvois; *E. sp.*: CHARACEÆ, *Chara sp.*: FILICES, *Lindsaya ensifolia*, Swartz; *Adiantum humulatum*, Burmann; *Cheilanthes tenuifolia*, Swartz; *Acrostichum aureum*, Linn.

Mr. Fletcher exhibited two frogs, duplicates of specimens recently submitted to Mr. Boulenger of the British Museum, who regards, and will shortly describe, them as representing two new species, namely, a *Limnodynastes* from the Mudgee district, collected by Mr. A. G. Hamilton, and a *Crinia* from Warragul, Gippsland, Victoria, collected by Mr. R. T. Baker. Also the remarkable frog exhibited at a previous meeting (*vide* Proceedings, March, 1887) which from the cursory examination then possible, nobody present recognised, and which he again showed to point out that it appeared to be a very large old male specimen of *Heliophorus albopunctatus*, Gray, in which the shagreening of the skin was more than usually developed.

Mr. North exhibited the eggs of the following species:—*Menura superba*, Davies; *M. alberti*, Gould; and *M. victorice*, Gould: also the eggs of six species of Bower-birds, viz.:—*Ptilonorhynchus violaceus*, Vieillot; *Chlamydodera maculata*, Gould; *C. cerviniventris*, Gould; *Sericulus melinus*, Latham; *Ailurædus viridis*, Latham, and *A. maculosus*, Ramsay.

Mr. J. Douglas Ogilby exhibited three specimens of the larval form of the genus *Trachypterus*, two of which were obtained from the Mediterranean, and are labelled *T. tenia* by Dr. Dohrn; the third was taken in Port Jackson by Mr. W. Paul, and is probably the young stage of Dr. Ramsay's *T. jacksoniensis*, a species which is so closely allied to the northern *T. arcticus* that there is great doubt as to their specific distinction. The great development of some of the fins is worthy of notice, especially as in the adult state they are either very much modified or (in the case of the ventrals) entirely absent.

Mr. Skuse exhibited a complete collection of Dipterous Insects—Sciaridæ and Mycetophilidæ—described by him in his paper at this and a previous meeting.

Mr. Olliff exhibited the Butterflies alluded to in his paper on Variation of Colour.

The President exhibited the pouch of a specimen of *Dasyurus viverrinus*, which he had received from Mr. Kater, containing eight young ones.

The following postscript to Professor Hutton's paper "Notes on the Mueller Glacier, N.Z.," which arrived too late to be inserted at the end of the paper (*antea*, p. 429), was read on behalf of the author :—

"Since my paper was read another important change has taken place in the terminal face of the glacier. The Hooker River now disappears under the ice of the Mueller Glacier just south of the ice-cliffs. It runs down a deep ice-funnel more than 150 feet deep, and re-appears again at the outlet of the Mueller Glacier ; thus proving the correctness of my conjecture that the ice of the glacier descended below the level of the Hooker Valley. In consequence of this change there is now an uninterrupted road from the Hermitage to Mt. Cook (July, 1888)."

WEDNESDAY, 26TH SEPTEMBER, 1888.

The President, Professor Stephens, M.A., F.G.S., in the Chair.

Mr. H. Tryon of Brisbane, was present as a visitor.

Mr. H. C. Thomas was elected a Member of the Society.

The President announced that two Excursions had been arranged for the ensuing month :—

- (a) October 6th—To St. Mary's, South Creek. To leave Redfern Station by the 9 a.m. train.
 - (b) October 20th—To Springwood, Blue Mts. To leave Redfern Station by the 9 a.m. train.
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DONATIONS.

"Transactions of the Royal Society of Edinburgh." Vols. XXX. (Part 4); XXXI.; XXXII. (Parts 2-4); XXXIII. (Parts 1 and 2), (1883-88); "Proceedings." Sessions 1883-84, (Nos. 115-118); 1884-85, (Nos. 119 and 120); 1885-86, (Nos. 121 and 122); 1886-87, (Nos. 123-125). *From the Society.*

"Zoologischer Anzeiger." XI. Jahrg., Nos. 284 and 285 (1888). *From the Editor.*

"The Journal of the College of Science, Imperial University, Japan." Vol. II., Parts 2 and 3 (1888). *From the President of the University.*

"The Proceedings of the Royal Society of Queensland, 1888." Vol. V., Part 1. *From the Society.*

"The Transactions of the Entomological Society of London for the year 1888." Part 2. *From the Society.*

"Feuille des Jeunes Naturalistes." No. 214 (August, 1888). *From the Editor.*

"Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino." Vol. III., Nos. 44-48 (1888). *From the Museum.*

"Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg." Jahrg. XLIV. (1888). *From the Society.*

"Abhandlungen herausgegeben von der Senckenbergischen Naturforschenden Gesellschaft, Frankfurt a. M." XV. Band, 2 Heft (1888). *From the Society.*

"Archives Néerlandaises des Sciences exactes et naturelles." Tome XXII., Livs. 4-5 (1888). *De la part de la Société Hollandaise des Sciences à Harlem.*

"Archiv für Naturgeschichte." Jahrg. LIII. Band I., Hefts 1-2; Band II., Heft 2 (1887). *From the Editor.*

"The Victorian Naturalist." Vol. V., No. 5 (September, 1888); "Eighth Annual Report 1887-8;" "List of Members, &c." *From the Field Naturalists' Club of Victoria.*

"Bulletin de la Société Impériale des Naturalistes de Moscou." Année 1888. No. 2. *From the Society.*

"The Goldfields of Victoria—Reports of the Mining Registrars for the quarter ended 30th June, 1888." *From the Secretary for Mines, Melbourne.*

"Geological and Natural History Survey of Canada—Annual Report." (New Ser.). Vol. II. (1886). *From the Director.*

"Anales del Museo Nacional, República de Costa Rica." Tomo I. (1887). *From the Museum.*

"Naturhistorisches Museum zu Hamburg—Bericht des Direktor 1887." *From the Director.*

"Mémoires du Comité Géologique, St. Pétersbourg." Vol. V., Nos. 2-4 ; Vol. VI. ; Vol. VII., Nos. 1-2, (1888). "Bulletins." Vol. VI., Nos. 11-12 (1887) ; Vol. VII., Nos. 1-5 (1888) ; "Supplément au T. VII." *De la part du Comité.*

"The American Naturalist." Vol. XXII., No. 258 (June, 1888). *From the Editors.*

"The Canadian Record of Science." Vol. III. No. 3 (1888). *From the Natural History Society of Montreal.*

"Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, U.S.A." Vol. XIII., No. 10 ; Vol. XVII., No. 1 (1888). *From the Curator.*

"The Australasian Journal of Pharmacy." Vol. III., No. 33 (September, 1888). *From the Editor.*

"The Journal of the Bombay Natural History Society." Vol. III., No. 3 (1888). *From the Society.*

"Journal of the Royal Microscopical Society, London, 1888." Part 4. *From the Society.*

Six Palæontological and Botanical Memoirs. By Professor Ralph Tate, F.L.S., F.G.S., &c. *From the Author.*

CONTRIBUTION TO A KNOWLEDGE OF THE
GENUS *IODIS*.

BY THOMAS P. LUCAS, M.R.C.S.E., L.S.A., L.R.C.P.ED., &c.

Through the published descriptions of Lepidoptera by Mr. Meyrick, collectors in Australia are beginning to have the advantage of such a basis as is compatible with new work. Hitherto the paucity of books of reference—the scattered fragments of records—and the difficulty of recognising the too brief descriptions of described species, have prevented collectors from doing further work. We gladly hail the papers by Mr. Meyrick, and can only express the wish that such contributions will be rapidly multiplied.

Of the genus *Iodis*, Mr. Meyrick computes that there are 200 species. Of these he describes or tabulates 41 in Vol. II. (2nd series) of the Proceedings of this Society. To that list I am now able to add nine species. In addition, I have in this paper given additional localities for sixteen of his tabulated species from specimens in my own collection.

IODIS GLAUCOSA, n.sp.

♀. 20 mm.—Face and head dark green, fillet greenish-ochreous. Palpi light brown, very short. Antennæ brown. Thorax dark glaucous-green. Abdomen dark green, posteriorly and laterally lightish-ochreous. Legs ochreous. Forewings with costa rounded, apex angular; hind margin sinuous, oblique, rounded, apical third sub-convex; dark glaucous-green, sparingly darkened by indistinct straggling strigulæ; costa brown, densely hairy on free margin; discoidal spot small but conspicuous, black; cilia light grey, tending to orange at base. Hindwings as forewings; hind margin strongly bent and drawn to angle at vein 4.

Brisbane. One specimen; October, 1887.

In general relationship comes near *I. centrophylla*, Meyr.

IODIS ANGULATA, n.sp.

29 mm.—Head brown, fillet ochreous-white, post-orbital rims white. Palpi green; terminal joint long, greenish-grey. Antennæ brownish-ochreous. Thorax dark blue-green. Abdomen green, sides and apex white. Legs brown, hind pair ochreous, tibiæ brown. Forewings with costa arched, apex strongly angular; hind margin oblique, slightly rounded; bluish-green; costa only a very fine ochreous line; discal spot indistinct, small, black; cilia grey, green at base. Hindwings as forewings; hind margin strongly bent at vein 4, and thus showing three conspicuous angles—the apical, the anal, and the central prolongation of vein 4.

Brisbane. One specimen.

Allied to *I. centrophylla*, Meyr., from which it differs in many characteristics.

IODIS SUBALPINA, n.sp.

♂♀. 36 mm.—Head and face pale yellow, fillet white. Palpi crimson. Antennæ light brown, whitish underneath. Thorax green. Abdomen green, sides and apex white. Fore and middle legs red, hind legs ochreous-white. Forewings with costa arched, hind margin obliquely rounded; bright pea-green, costa ochreous; two finely pencilled interruptedly dentate ochreous lines, first from $\frac{1}{3}$ inner margin stops short at $\frac{2}{3}$ across wing immediately below $\frac{1}{4}$ costa, second from $\frac{2}{3}$ inner margin parallel with hind margin for $\frac{2}{3}$ width of wing, thence sharply rounded inwards to $\frac{2}{3}$ costa; discal spot deep glaucous-green; cilia crimson. Hindwings with colour and cilia as in forewings, the discal spot less distinct; first line absent, second line $\frac{2}{3}$ costa to $\frac{2}{3}$ inner margin, finely pencilled, ochreous, sinuous, dentate; hind margin angled, bent on vein 4; cilia of hind margin greenish-grey.

Fernshaw, Moe, Victoria (500 to 1500 feet).

Allied to *I. carenaria*, Gn.

IODIS ASSIMILIS, n.sp.

♂♀. 28-30 mm.—Head crimson, fillet ochreous-white, back of crown narrowly crimson. Palpi crimson, terminal joint short. Antennæ ochreous, pectinated, simple towards apex. Thorax deep emerald green; shoulders narrowly crimson, hairy beneath. Abdomen green, a conspicuous dorsal ochreous line, apex and sides white. Legs crimson, ochreous beneath, hind pair white. Forewings with costa slightly arched; hind margin in ♂ scarcely rounded, oblique; in ♀ rounded; rich deep emerald green; costa narrowly ochreous, rich crimson at base; a minute but distinct black-green discal spot; lines absent; cilia white. Hindwings as forewings, discal spot larger, dark green, cilia ochreous.

Brisbane. January to June, 1888.

Allied to *I. vertumnaria*, Gn., and *I. externa*, Walk.

IODIS BICOLORA, n.sp.

♂♀. 33-35 mm.—Face and head deep green, fillet white, post-orbital rims white. Palpi white, upper surface dark grey, terminal joint elongate. Antennæ white. Thorax green, densely hairy beneath. Abdomen green; sides, posterior third of dorsum, and apex white. Anterior legs light red, coxæ white; middle legs ochreous, posterior legs white. Forewings with costa nearly straight, hind margin slightly rounded; rich glaucous-green, with numerous short interrupted transverse whitish strigulæ; costa white, narrowing at base, and at $\frac{2}{3}$ becoming an attenuated ochreous line; discal spot deep glaucous-green; a faint, sometimes scarcely perceptible, whitish line $\frac{2}{3}$ costa to $\frac{3}{4}$ inner margin and parallel with hind margin; cilia whitish, dark green at base. Hindwings strongly rounded, obtusely bent on vein 4; discal spot faint glaucous-green; colour, strigulation, and cilia as in forewings.

Brisbane; rare. March to May, 1888.

This species is strongly allied to *I. ocyptera*, Meyr. It appears to be larger. Probably it has much more white on the abdomen, and the hind wings are obtusely bent on vein 4.

IODIS GRACILIS, n.sp.

♂♀. 30-32 mm.—Face ferruginous, becoming whitish-green on lower margin, fillet white, post-orbital rims white. Palpi grey, whitish beneath, terminal joint long. Antennæ light grey, pectinated, in ♂ short, brown. Thorax pale grey-green, white underneath. Abdomen grey-green; sides, extreme apex, and under surface white. Legs brownish-grey, hind pair white. Forewings with costa slightly arched; hind margin oblique, slightly rounded; costa light grey, finely edged with reddish-brown; light grey-green; crossed with numerous fine, sinuous, uninterrupted transverse pale grey strigulæ; a very faintly marked light line from $\frac{4}{5}$ costa to $\frac{2}{3}$ inner margin, in some specimens unrecognisable; cilia greenish-white, greener at base. Hindwings with colour, strigulæ, cilia, &c., as in forewings; anal angle prolonged and acute.

Brisbane; rare. November, 1887, to February, 1888.

This species is allied to *I. ocyptera*. It may be distinguished by the very delicate structure of the wings, which are more or less translucent, and by the uniform colour which has the appearance of a blue-green feebly dusted with grey.

IODIS MARIÆ, n.sp.

♂♀. 25-28 mm.—Head green. Palpi reddish-grey, terminal joint prolonged. Antennæ greenish-white, finely annulated with grey. Thorax green, collar and shoulders white. Abdomen creamy white; dorsum ferruginous, centred with white spots on front segments, and having bands of white posteriorly. Forewings with costa slightly rounded; hind margin obliquely rounded; bright green; costa with narrow line of creamy white, toward apical angle becoming ferruginous, and continuous with narrow

band round hind margin ; discal spot small, black ; a ferruginous line from $\frac{2}{3}$ of inner margin, crenate, dentate to half-way across wing, thence sharply deflected to $\frac{4}{5}$ of hind margin, and continuous with marginal band ; space enclosed reddish-brown, suffused with light violet ; cilia ochreous. Hindwings as forewings ; discal spot small, black ; a narrow ferruginous band continuous round hind margin and along inner margin to $\frac{4}{5}$, slightly diffused on anal angle ; ferruginous band at $\frac{2}{3}$ costa obliquely across to $\frac{2}{3}$, then rounded to $\frac{1}{3}$ of hind margin, space contained reddish-brown, suffused with light violet ; cilia reddish-brown, on inner margin very long, brownish-grey.

Brisbane. November, 1887 ; March, 1888.

Appears to come near to *I. buprestaria*, Gn. The conspicuous large red purplish blotches, which are contiguous on the hind margins of the wings, readily distinguish this handsome moth.

I have named this species in memory of my late wife, who discovered it in November, 1887, and who for years was a most indefatigable collector of Australian Lepidoptera.

IODIS EUCALYPTI, n.sp.

♂♀. 32-37 mm.—Face and head green, collar ochreous, dotted with ferruginous. Palpi ferruginous, terminal joint long. Antennæ ferruginous, in ♂ finely pectinated, pectinations brownish-grey, in ♀ finely beaded with reddish-ochreous. Thorax rich pea-green, posteriorly on dorsum an elongated ferruginous blotch with pink centre, hairy beneath. Abdomen green, a series of light ferruginous dots on dorsum, becoming a diffused blotch on fifth segment, ochreous posteriorly ; sides and undersurface white. Anterior and middle legs whitish, coxæ light ferruginous, posterior legs silky white. Forewings broad, costa arched, hindmargin rounded ; rich pea-green with numerous interrupted sinuous, finely pencilled ochreous-red transverse strigulae ; costa deeply ferruginous, finely irrorated with ochreous ; two sinuous interruptedly dentate reddish-ochreous lines ; first from a ferruginous

dot $\frac{1}{3}$ costa to $\frac{2}{5}$ inner margin, where it is lost in a conspicuous ferruginous dot; second from $\frac{4}{5}$ costa to $\frac{4}{5}$ inner margin; a deep ferruginous band continuous with costa on hindmargin, spots on veins bright golden-ochreous. Cilia ferruginous, tips grey. Hindwings broad, hindmargin rounded. Colour of hindmarginal band and strigulae as in forewings; second line finely pencilled, reddish-ochreous, sinuous, dentate, $\frac{4}{5}$ costa to $\frac{4}{5}$ inner margin, pointing deeply inwards in middle third; cilia as in forewing, on inner margin green, apices grey.

Brisbane. November, 1887.

A very handsome species, easily distinguished by the ferruginous border of the wings and the numerous ochreous-red strigulae.

Caterpillar allied to the curious flat larvæ, with oblique side projections, of *insperata* and *pieroides*. Feeds on dwarf scrubby Eucalyptus.

IODIS MARGINATA, n.sp.

21 mm.—Head reddish-ochreous, fillet ochreous. Palpi whitish, terminal joint long. Antennæ red, underside ochreous. Thorax light blue-green, dorsal line posteriorly and lateral lines red. Abdomen light blue-green, dorsal line blackish-red, finely annulated with creamy-white. Forewings with costa nearly straight, hindmargin rather obliquely rounded; light blue-green, almost a milky-blue. Costal band deep red, finely edged with ochreous; hindmarginal line a series of reddish-black lunules connected by points, and bordered by a pencilling of lighter red; sub-marginal line white, finely sinuous. Cilia reddish, terminal half lighter. Hindwings as forewings, hindmargin strongly rounded, angled and bent at vein 4; sub-marginal, marginal lines and cilia as in forewings.

Brisbane. One specimen; February, 1888.

I think this species hardly belongs to the genus *Iodis*, but as Meyrick has grouped so many genera together under this name, I have placed it here for the present. Though not large the insect is most conspicuous with its deep red wavy wing border, and by the uniform colour of milky-blue, devoid of marking.

Iodis meandraria, Gn. Moe, Gippsland, Victoria.

I. stereota, Meyr. Cheltenham, Melbourne, Victoria.

I. fugitivaria, Gn. Mount Macedon, Victoria.

I. gratiosa, Gn. Beaconsfield, Victoria.

I. centrophylla, Meyr. Moe, Healesville, Victoria.

I. submissaria (?), Walk. Melbourne.

I. cadmaria, Gn. Melbourne, Victoria.

I. cadmaria, var. Moe, Gippsland, Victoria.

I. rhodocosma, Meyr. Brisbane, Queensland.

I. buprestaria, Gn. Cheltenham, Moe, Victoria.

I. boisduvalaria, LeG. Fernshaw, Victoria; Windermere, Tasmania (Mr. Barnard).

I. partita, Walk. Brisbane, Queensland. Five specimens.

This is a most beautiful species, representing a group of roses on a green ground.

I. iosticta, Meyr. Brisbane, Queensland.

I. crossota, Meyr. Brisbane, Queensland.

I. insperata, Walk. ♂ Melbourne, Victoria: ♀ Melbourne, Victoria; Brisbane.

I have taken several females, but as yet no males, in my own garden at Brisbane.

I. pieroides, Walk. Brisbane, Cooktown, Queensland.

Larva feeds on Rose, Guava tree, Eucalypts, &c., and resembles that of *I. insperata*.

SAPINDACEÆ OF AUSTRALIA

BY REV. W. WOOLLS, PH.D., F.L.S.

The species of this order are for the most part natives of the tropics, but, in genera not extending to Australia, they are found in the temperate regions of the Northern Hemisphere. In Australia the species are more numerous within the tropics, but a few occur in Victoria and South Australia, whilst two (*Dodonæa viscosa* and *D. ericifolia*) extend to Tasmania, *D. ericifolia* being limited to that island. According to the Census of Baron Mueller, there are 16 genera, including 102 species, of the order in Australia; but only three of the genera are represented in W. Australia, viz., *Heterodendron*, *Diplopeltis*, and *Dodonæa*, though it is probable that, as the tropical parts become better known, others may be discovered. The genera with the respective species are thus enumerated in the Census:—*Cardiospermum*, 1; *Ganophyllum*, 1; *Atalaya*, 6; *Diploglottis*, 1; *Erioglossum*, 1; *Castanospora*, 1; *Allophyllus*, 1; *Cupania*, 23; *Nephelium*, 12; *Heterodendron*, 2; *Harpullia*, 4; *Akania*, 1; *Diplopeltis*, 2; *Dodonæa*, 42; *Distichostemon*, 1; and *Blepharocarya*, 1. The species are distributed in the following order:—Queensland, 61; N. S. Wales, 40; W. Australia, 19; N. Australia, 19; S. Australia, 11; and Victoria, 8.

In N. S. Wales the following genera are thus represented:—*Atalaya*, 3 species; *Diploglottis*, 1; *Cupania*, 8; *Nephelium*, 5; *Heterodendron*, 2; *Harpullia*, 3; *Akania*, 1; *Dodonæa*, 17. Of these, however, the larger species do not extend far beyond the northern borders of the colony—*Cupania semiglaucæ*, F.v.M.,

Nephelium leiocarpum (?), F.v.M., and *Harpullia pendula*, Planch., being the only Sapindaceous trees of N. S. Wales which furnished any woods for the Adelaide Jubilee International Exhibition of 1887, though specimens of *Cupania anacardioides*, A. Rich., might have been procured near the coast not far from Sydney. In the list of Queensland woods furnished by F. M. Bailey, F.L.S., five additional species of *Cupania*, two of *Ratonia*, one of *Atalaya*, one of *Nephelium*, one of *Heterodendron*, and one of *Akania* are given as affording timbers of different qualities, but the larger species only are said to be common to the scrubs of Queensland and N. S. Wales. The species of the order found near Sydney are:—

(1) *Cupania semiglauca*, F.v.M., generally a small tree in the southern parts of the colony, but attaining a height of 50 or 60 feet in Queensland and the northern scrubs of N. S. Wales. The wood is reported to be soft and of no recognised value. *C. anacardioides*, A. Rich., seldom attains any size, excepting in the northern scrubs and in Queensland, and its wood is not much used. *Diploglottis Cunninghami*, Hook., which is nearly allied to *Cupania* (and has a wide range from Queensland to Illawarra), does not occur near Sydney. This, according to Mr. Bailey, is called "Native Tamarind," and furnishes a close-grained and very tough wood.

(2) *Nephelium leiocarpum*, F.v.M., is the only species of the genus that is found near Sydney, and it extends to Twofold Bay, but it is only a small tree with inconspicuous flowers. The fruit is somewhat remarkable, the black shining seeds being inclosed in a red arillus.

(3) *Dodonæa* is better represented from Port Jackson to the Blue Mountains than any other genus of the order, but the species are small. *D. triquetra*, Andr., is very common near Sydney. It

is a large shrub with angular branches ; and in Queensland, where it attains greater size, the wood is utilised on account of its close grain. *D. viscosa*, Linn., is also very widely distributed, and when it can be found sufficiently large, the wood is used for xylography and turnery. This is a most variable species, and according to Mr. Benthams, it is found in differing forms in America, Africa, Asia, New Zealand, and the Isles of the Pacific. *D. attenuata*, A. Cunn., was first noticed by A. Cunningham on his way over the Blue Mountains, but some forms of *D. viscosa* can scarcely be distinguished from it. *D. cuneata*, Rudge, is a small spreading shrub, very common in some places between Sydney and the Mountains. *D. truncatiales*, F.v.M., is a tall shrub with long narrow leaves, and capsules with very divergent wings. It is found principally in rocky places on the banks of creeks. In the pinnate series of the genus, *D. megazyga*, F.v.M., has occasioned some difficulty, as only a solitary specimen of it was found on the banks of the Parramatta River by the writer ; and though many persons have since searched for a similar tree, they have not succeeded in finding one. Baron Mueller thought it probable that the form was a pinnate variety of *D. viscosa*, but as Mr. Benthams had received similar specimens from other quarters, he had described it in the *Flora Australiensis* as a distinct species. *D. pinnata*, Sm., is a small softly hirsute plant found on the banks of the Nepean ; and probably rare. As far as known, it is confined to N.S. Wales. *D. multijuga*, G. Don, marked Port Jackson by R. Brown, was found on George's River by the writer, but is more common on the Blue Mountains and to the southward, and differs from the last in being very viscid and in having the flowers in loose racemes. *D. boroniifolia*, G. Don, is usually regarded as a species belonging to the western side of the Blue Mountains, but the writer collected specimens of it in a sandy bush between Richmond and Castle-

reagh. The late Mrs. Calvert also found it on the Blue Mountains, and according to the *Flora Australiensis*, it is common to Queensland and Victoria. This species has a more upright habit than some of its congeners and rises to the height of 5 or 6 feet.

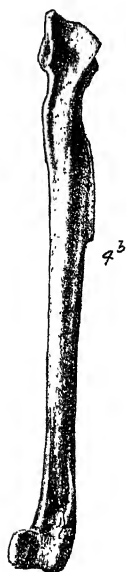
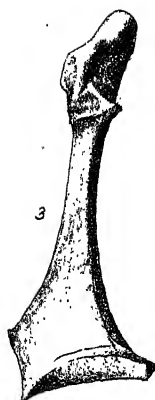
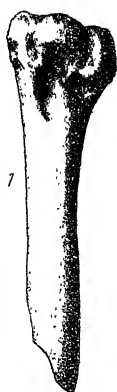
The larger species of the order, common to Queensland and the northern scrubs, are *Cupania pseudorhus*, A. Rich.; *C. xylocarpa*, A. Cunn.; *C. nervosa*, F.v.M.; *Ratonia pyriformis*, Benth.; *R. tenax*, Benth.; *Nephelium tomentosum*, F.v.M.; *Harpullia pendula*, Planch.; and *Akania Hilli*, J. D. Hook. *Atalaya hemiglauca*, F.v.M., is abundant in parts of the western interior. It is a small tree, and on the Lachlan has the popular name of "Rosewood," but not allied to other trees called by the same name to the north. The wood is of a yellowish or reddish colour, and being tough, is used for pick handles. The leaves are sometimes eight inches long, and of a harsh texture; and the flowers are white, in dense panicles, and larger than those of *Cupania*. *Heterodendron oleifolium*, Desf., is also from the interior, being a small tree with leaves seldom exceeding four inches in length, loose racemes of inconspicuous green flowers, and seeds half immersed in a red arillus. The sap wood is yellow, but the inner dark brown, hard, and closely grained, and it can be applied to any of those purposes for which European box is used.

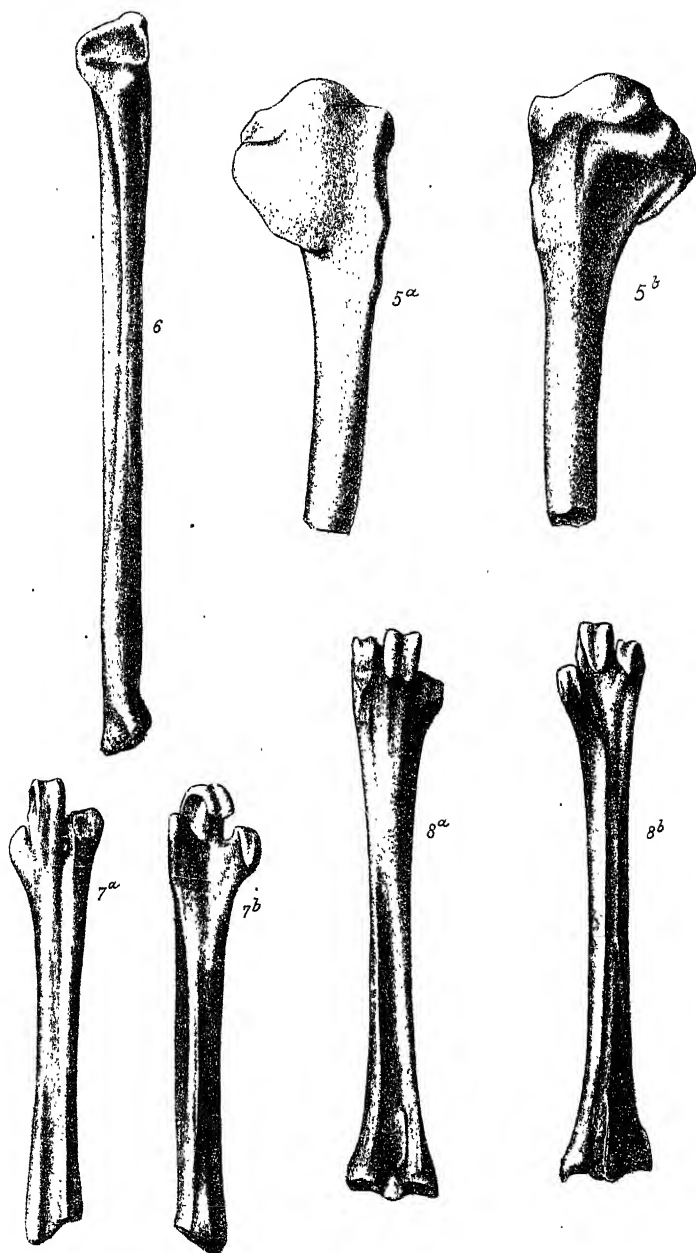
The distribution of the Sapindaceæ is remarkable. According to the arrangement of Bentham and Hooker, 73 genera are known. They are for the most tropical, especially in South America and South Asia; but they are found also in North America and Northern India, in the South of Africa, and (if *Staphylea* is reckoned in the Order) in Europe also. The anomalous genus *Loxodiscus* occurs in New Caledonia, whilst two species of the order extend to Tasmania, and one to New Zealand. *Sapindus*

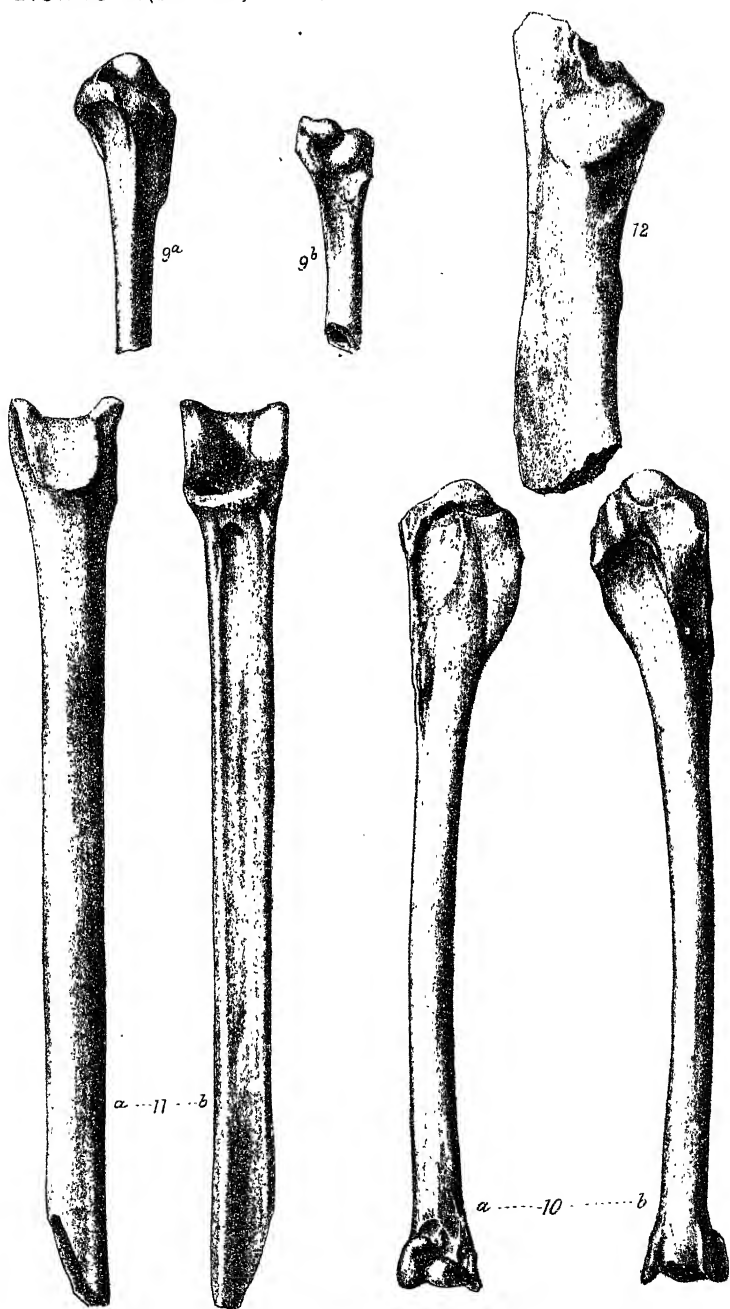
reckons some 40 species, chiefly tropical, one of which (*S. australis*, Benth.) is endemic, unless indeed, as indicated in the Baron's Census, the species should be referred to *Atalaya*. As in Australia *Eucalyptus* is the most characteristic genus of the Myrtaceæ, and *Acacia* of the Leguminosæ, so *Dodonæa* represents most fully the Sapindaceæ. The genus *Dodonæa* was established by Linnæus, and when Willdenow published the plants of that most eminent man in 1799, *D. viscosa*, *D. triquetra* and *D. angustifolia* (the first from India, the second from New Holland, and the third from the Cape of Good Hope), were the only known species. Now about 50 have been described, the greater number of which are indigenous in Australia, and from the hop-like appearance of their fruits are called "Native Hops." Though not in any way allied to hops truly so called, they are used in parts of the interior for the preparation of yeast. Explorers in Australia refer frequently to the species of *Dodonæa*. Sir T. Mitchell, in his "Tropical Australia," records ten species; and Baron Mueller, in his "Botanical Report on Gregory's Northern Expedition," mentions nine; whilst in a late number of his *Fragmenta*, Vol. ix., he has described some new species and given the geographical limits, so far as known, of the genus in Australia. As regards the distribution of the species of *Dodonæa*, it would be interesting to trace its relation to the origin and migration of the flora generally. Sir J. D. Hooker, in his elaborate essay on "The Flora of Australia, its Origin, Affinities, and Distribution," suggests that the massing of most of the peculiar features of the Australian Flora in the west, unmixed there with Polynesian, Antarctic, or New Zealand genera, is an argument for regarding Western Australia as the centrum of Australian vegetation, whence a migration proceeded eastward; and the eastern genera and species must in such a case be regarded as

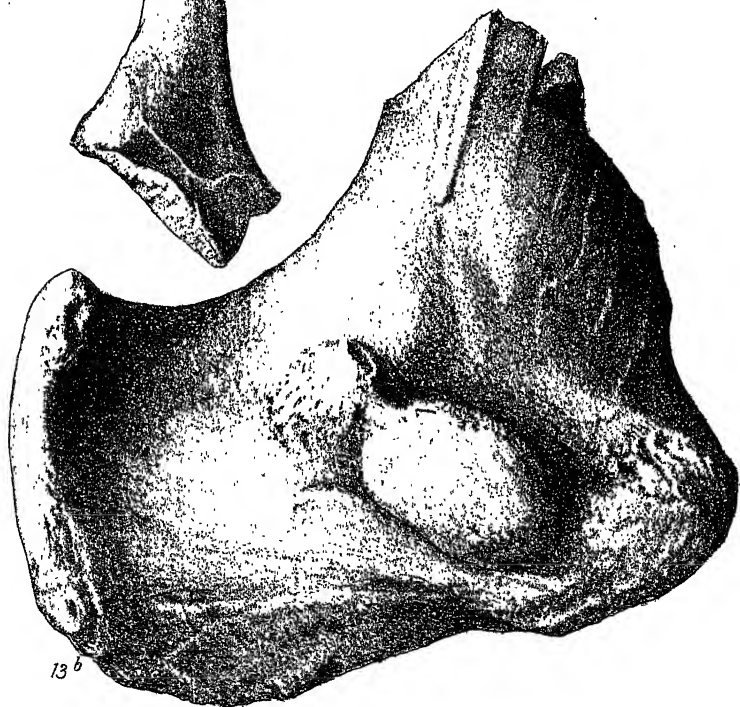
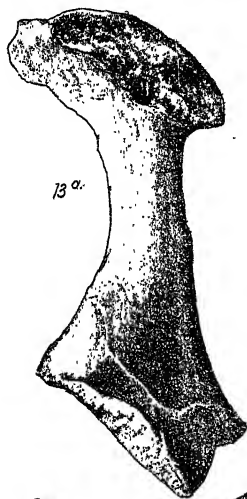
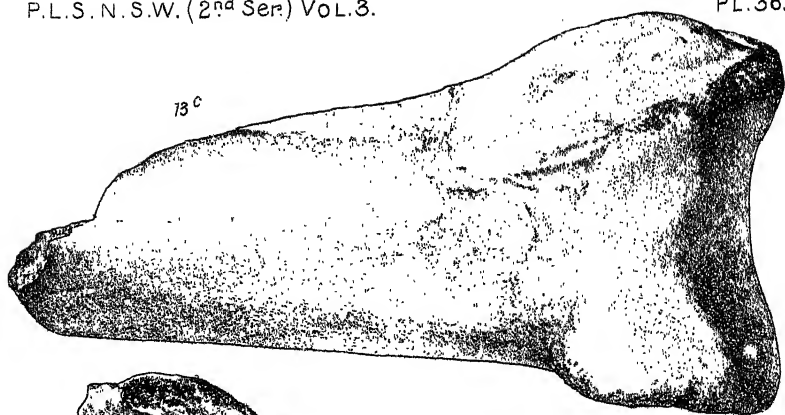
derivative forms." Wallace, in his interesting and suggestive "Island Life," explains on geographical grounds the marvellous difference between the floras of South-eastern and South-western Australia, and he states as a legitimate conclusion "that South-western Australia is the remnant of the more extensive and more isolated portion of the continent in which the peculiar Australian flora was principally developed." And he then adds: "But while this rich and peculiar flora was in process of formation, the eastern portion of the continent must either have been widely separated from the western, or had, perhaps, not yet risen from the ocean." Now, we find that of the 41 species of *Dodonaea* known to exist in Australia, 18 (and probably that number will be increased) are indigenous in W. Australia, 10 in S. Australia, eight in Victoria, 17 in N. S. Wales, 13 in Queensland, and seven in N. Australia. Of the 18 western species, 11 have not as yet been found in any of the other colonies, and 12 now distributed through the eastern colonies are unrepresented in the west; whilst one (*D. viscosa*, its var. *angustifolia*, and others) is found widely scattered in Australia, especially near the coast. Though these figures seem to militate against the supposition that all the species originally had their "centrum" in the west, and that in process of ages many travelled to other parts of Australia, differing as they established themselves according to the climatic and geologic influences of their new habitats, it must be borne in mind that, in the opinion of Mr. Bentham, the endemic species of Australia are difficult to distinguish by positive characters, and "that species which at first sight appear the most distinct often pass into each other by the most insensible gradations." But whilst it might be conceived that all the Australian species of *Dodonaea* emanated from derivative forms in W. Australia, it seems necessary to determine the amount

of variation to which the respective species are subject, and how far certain forms more or less differentiated from their original types have found their way from Asia or the Oriental Archipelago. Mr. Bentham, whose opinion on this subject is entitled to the greatest weight, thought that the predominant portion of the Australian flora was strictly indigenous, having originated or been differentiated in Australia; but the author of "Island Life" is evidently impressed with the conviction that whilst such might be the case, the anomalous distribution of species (especially in S. Eastern and S. Western Australia) is due to the fact that, in the Cretaceous period, the sea separated the eastern coast from what was then the main island or continent of Australia.









A GLIMPSE OF THE POST-TERTIARY AVIFAUNA OF QUEENSLAND.

BY C. W. DE VIS, M.A.

(PLATES XXXIII.-XXXVI).

Of the smaller relics of the wealth of vertebrate life lately become extinct in this portion of Australia, most of those known to the writer have been yielded by the Darling Downs in the immediate neighbourhood of Chinchilla, a township 200 miles by rail west of Brisbane. The Chinchilla deposits are beds of sand of considerable but unascertained thickness, containing local accumulations of mutilated and with rare exceptions unconnected bones, and overlaid by a hard conglomerate of argillaceous grit and gravel, with similar bones embedded, and evidently a lacustrine beach or river bank detritus. The chief exposure of the fossil remains occurs about three miles from the township on the north bank of the River Condamine, where the river in flood has cut into one of these bone beds. Here we acquire the greater part of the knowledge we have of the freshwater productions of the period. Molluscs (*Unio*, *Vivipara*, *Melania*, *Cyclas*), Fishes (*Oligorus*, *Ceratodus*, *Copidoglanis*), Alligators (*Pallimnarchus*) and turtles here mingle with species of terrestrial vertebrates in profusion. And as we may reasonably infer from such commixture, that we are upon or near the edge of a once densely populated watercourse or basin, we naturally anticipate that the birds which may perchance have added their quota to the buried coinage of the past, will for the most part belong to tribes which for food or drink haunt the margins or explore the waters of the lakes and rivers of the present day. The expectation has been realized by an examination of the few bird bones brought to light ;

few that is in comparison with the very large number of mammalian and reptilian remains accompanied by them: not so few considering how scantily, as a rule, traces of birds occur in the rocks, and how rare it is to meet with a bird bone in the bush. With the exception of a single fragment referred dubiously to a cockatoo (*Cacatua*), there has not yet been recognized a bone of any bird of a grade higher than that of the old order *Grallatores*, the majority of them belonging to the *Anseres* and *Rallidæ*.*

In the present notice those remains alone find place which can with sufficient confidence be referred to known genera. A series of skeletons of Australian and New Zealand birds, though fairly rich, may perhaps afford too narrow a field of comparison for determining with certainty that a fossil species is both extinct and undescribed; but if it should prove either that an Australian post-tertiary bird is still extant elsewhere, or that it has already been described as an extinct species occurring in an extra-Australian deposit, the writer will be content to know that such discovery has resulted from his attempt to add somewhat to the knowledge of post-pliocene life.

NYROCA ROBUSTA, n.sp.

(Pl. XXXIII. figs. 1-2.)

For a predecessor of the white-eyed duck, *Nyroca australis*, Gld., the name proposed is suggested by the superior strength indicated by its bones.

Right humerus.—The bone represented by its distal half has a sub-cylindrical and sub-elongate shaft, and a distal expansion of moderate width. The tubercle terminating proximad the border of the radial tuberosity, developed in marine birds of flight into a large "ectocondylar process," and in varying degrees and forms persistent in the great majority of terrestrial birds, is here entirely absent, and replaced by a sigmoid depression or scar commencing on the palmar surface, and curving over the foot of the radial tuberosity, the edge of which is compressed and proceeds directly

* Since this was written a large pigeon has been determined.

from the side of the radial condyle at its mid-length. A distinct tubercle is wanting in the Alcedinidæ (*Dacelo*, *Halcyon*), but in these it is substituted by a tumid expansion of the end of the radial ridge which runs outward to join the radial condyle at its anconal end. In all the genera of the Anatidæ (save *Dendrocygna*) available for comparison, the tubercle is absent, and in *Nyroca* its place is occupied by a depression at the foot of the radial ridge, similar to but of smaller size and feebler definition than that of the fossil. The radial condyle is broad, regularly elliptical, obtuse and very feebly recurved at its palmar end. It is separated from the ulnar condyle by a narrow groove, and its axis forms an acute angle with that of the shaft, a further prohibition against referring the bone to the Falconidæ or Striges. The ulnar condyle is relatively large, ovate, but little contracted at its junction with the radial, and is distinctly separated from the ulnar tuberosity by an oblique groove continued from the palmar to the anconal surface. Its convexity is both longitudinally and transversely continuous, a feature separating it from Corvidæ and other Passeres. The separation of the ulnar condyle from the adjacent tuberosity by a grooved surface occurs, but with less decision, in Alcedinidæ. In *Dacelo* the palmar end of the groove is crossed by a ridge from the endocondylar tubercle to the ulnar condyle. Moreover, in this genus the ulnar condyle is greatly constricted by a deep interrotular notch. In the Anatidæ, except *Chenopsis* and *Dendrocygna*, the condition of this part of the fossil is clearly identifiable, and in none more so than in *Nyroca*. The depression on the palmar surface is sub-oval in shape. It commences at the endocondylar tubercle, and runs obliquely proximad to the radial edge of the shaft at its expansion. The form and extent of this depression do not however constitute a character to be relied on as an index of affinity.

The characters, positive and negative, of the fossil in question, point conclusively to the Anatidæ as its family, and to *Nyroca* as its generic status.

It was a distinctly larger species than its Australian representative in modern days, being one-eighth more in the width of the

Ulna.—The proximal end of an ulna of this duck has been met with, but requires no further notice.

elbow joint. Its specific differences in the structure of the joint are greater relative length of the ulnar condyle and greater obliquity of its palmar edge, a greater obliquity of the groove between it and the ulnar tuberosity, greater extent of the palmar depression, greater size and distinctness of the impression in place of the ectocondylar tubercle, a much deeper transverse depression on the anconal side between the tuberosities and more strongly marked grooves over the anconal side of the joint. If these are deemed sufficient for specific distinction the writer suggests for the extinct bird the name at the head of this notice.

Left coracoid.—The fore and aft compression of the shaft immediately below the inner process, and the absence of any expansion or production of the point of that process are characters almost sufficient in themselves to show that this is a coracoid of one of the Anseres: taken in conjunction with the extension of the sternal facet across the whole breadth of the sternal end, they leave no room for doubt on the question. We may in brief compare it directly with the corresponding bone in *Nyroca australis*. It is a trifle shorter, but in the shaft distinctly stronger. The supraglenoid crest is larger relatively and has a more rapid inclination from the glenoid border—on its hinder side the ridge descending from it to the scapular process is better marked, and overhangs a much deeper and broader depression of the shaft on the hinder side beneath the process—the process itself is more rounded and produced on that side. On the foreside of its upper edge, the area within that edge and a ridge continuing upwards the anterior margin of the glenoid cavity is broader and its limiting ridges stronger. The lower edge of the scapular surface is not exserted, the inner sternal angle is more rounded, the inner side of the expanded end of the shaft more numerous marked with oblique ridges, the glenoid fossa facing less outward. As the superiority in size and strength over the recent bone shown by this corresponds fairly with that observed in the humerus already mentioned, no reason can be given why the coracoid under observation should not be attributed to the same bird.

NYROCA AUSTRALIS, Gld.

(Pl. XXXIII. fig. 3.)

Between a second coracoid of a *Nyroca* and that of *N. australis* there are differences which might be interpreted as specific, but which, on the other hand, may be reasonably thought within the range of individual variation; and since difference of geologic time is not of itself sufficient proof to the contrary, this bone is provisionally referred to the extant species. It is the first instance, within the writer's personal experience, of identity or even of affinity so close, between a recent and postpliocene vertebrate from the Darling Downs.*

ANAS ELAPSA, n.sp.

(Pl. XXXIII. figs. 4a, 4b, 4c.)

Left tibia.—In this bone the procnemial ridge is produced from the tibial side of the rotular process to a length exceeding its depth, and is upwardly inclined. In the Falconidæ and Striges, Alcedinidæ and Psittaci, a peculiar facies is given to the head of the tibia, as seen from above, by the straightness of its anterior border resulting from the feeble development of the rotular process and ectocnemial ridge. As an almost equally characteristic form of the part in Passeres, the anterior border curves forward at both ends, forming the edge of a deep median sulcus between the greatly expanded pro- and ectocnemial ridges. This is well illustrated by *Menura*. In some pigeons also, e.g., *Megaloprepia*, the junction of the ridges forms a median notch—in others, *Macropygia*, *Goura*, the notch is on the inner side adjacent to the rotular process—but in these birds the ridges are comparatively feeble. With a similar disposition a great expansion of the ridges takes place in the Rallidæ and Anseres, and in the latter the elongation of the procnemial ridge in proportion to its depth reaches its greatest extent. That of the fossil is eminently natatorial in aspect, and its anserine rather than ralline affinity is supported by the absence of any scar for a first metatarsal, and by the almost

* *Vide* Postscript at the end of this paper (p. 1292.)

entire absence of a tendon groove or tunnel on the outer edge of the distal end. Its proportions and general appearance are those of a teal, its size about that of *A. punctata*. From this it differs as follows:—the head is longer in proportion to its breadth, the notch between the intercondylar tuberosity and entocondylar concavity is deeper, the ectocnemial ridge less falcate in shape descending on to the shaft with a gentler curve, the distal half less attenuated, the tendinous groove on the outer edge obsolete, the distal orifice of the precondylar groove larger.

Femur.—The cue to the identification of this bone, the proximal half of a left femur, is given by the unusual expansion forwards of the great trochanter beyond the line of the head and neck, giving an obliquity to its surface, as seen from above, almost characteristic of the Anseres. Among these it agrees nearly in size and proportions with *A. punctata*, from which it is distinguishable by the small size of the head, narrowness of the neck, and by the lower position and smaller extent of the *glutei* insertions.

DENDROCYGNA VALIDIPINNIS, n.sp.

(Pl. XXXIV. figs. 5a, 5b, 6.)

Proximal half of left humerus.—The pectoral process is low, and runs with a straight edge and gentle obliquity from the pectoral crest to the radial tubercle. This points away from the Raptorial birds, diurnal or nocturnal, the perchers and kingfishers. The process is concave on its inner side; in the parrots and pigeons a slightly concave surface on this side is sometimes seen. The ulnar tubercle is low, contrasting with its elevation in the bustards, ibises, and plovers; it is much expanded over a deeply excavated sub-tuberos fossa, and its sub-tuberos ridge sweeps backwards to the shaft with a strong curve and a sharp edge, a form sufficing to distinguish it from the corresponding part in the herons, coots, and pelicans. From the grebes it is not so readily distinguished by a single character; the most obvious difference it presents is the shortness of its pectoral crest, which in *Podiceps* is continued forwards with a sharp curved edge nearly to the radial tubercle. Analysis leaves only the Anseres among terrestrial birds for comparison. The highest point of the pectoral

crest is in most ducks in advance of the junction of the sub-tuberos ridge with the shaft; in *Dendrocygna eytoni* it is very nearly opposite to that point; in the fossil it is opposite; there is, moreover, in *D. eytoni* a rather peculiar feature with which the fossil is in close agreement—the pectoral process is bent slightly but sharply downwards from the head, rising from a definite line of junction between the two. There appears, therefore, sufficient reason to refer the bone to the genus *Dendrocygna*, but it cannot be identified with either of the species now living in Australia. From *D. eytoni*, to which it has the greater resemblance, its differential characters are these:—the articular head is relatively of much larger size, and is more hemispherical, the radial tubercle larger. On the inner surface the ridge bordering the sub-tuberos fossa above runs at a nearly right angle from the shaft, and the fossa itself is considerably broader. Finally, the whole shows a superiority in size greater than may fairly be allowed to an individual of *D. eytoni*.

Right ulna.—Intermediate in length between the ulnas of *D. eytoni* and *D. gouldi*, it is stronger than the latter, which, though considerably shorter, is less attenuated in the shaft than in the former. This has the reduction of the olecranal and radial processes usual in the swimming birds, and, to a less extent, in the waders. In the form and structure of the proximal articular surface it has greater resemblance to *D. eytoni* than to *D. gouldi*, but the reverse is the case in the distal end. It differs from both in having the margin of the ulnar cavity carried across the radial edge, forming an angular line of division between the radial cavity and the facet for the head of the radius; the insertion of the metacarpal flexor more strongly marked, and pierced with two minute foramina; and the row of quill tubercles scarcely appreciable to the touch. The distal joint differs only in size from that of *D. eytoni*.

PORPHYRIO (?) REPERTA, n.sp.

(Pl. xxxiv. figs. 7a, 7b.)

Distal two-thirds of a right tarso-metatarsus.—The trochlear expansion is moderate, the shaft elongate and sub-cylindrical, the trochlear surface for the second toe much proximad of that for the

third. These characters exclude from consideration the Passeres, Raptores, Psittaci, Rasores, Tantalidæ, and Ardeidæ, as well as the Plovers, Pelecanidæ, and Penguins. The scar for the first metatarsal is distinct, and forbids reference to the Anseres and Grebes. The combined features are those of a representative of the Rallidæ. The rotular groove for the third toe is truncated on reaching the palmar surface, and the rotular surface for the second is as aforesaid entirely proximad of that for the third. Such is nearly the case in *Porphyrio*, and to that genus the bird, a coot of about the same size as *Porphyrio melanotus*, may, with some diffidence however, be referred. The differences observable on comparing it with its homotax in *P. melanotus* are great, and possibly of more than specific import. The trochlear surface for the third toe is less expanded but its groove is deeper. It is more distinctly truncated in an outwardly oblique direction, the inner lip of the groove being shorter than the outer. The articular surface for the second toe is also smaller, more feebly grooved, and it is inclined more strongly outwards. The fourth toe is more distant from the third. The concavity of the palmar surface of the shaft extends but to a short distance from the calcaneal tubercle, below it the shaft is trihedral. On the anterior side there is but little difference beyond a greater depth of the concavity of the proximal end near the fracture.

GALLINULA STRENUIPES, n.sp.

(Pl. xxxiv. figs. 8a, 8b.)

Left tarso-metatarsæ.—To avoid a tedious repetition of discriminating processes this bone may at once be associated with the Rallidæ. The shaft is sub-quadrate in section, and the calcaneal process is not cuneiform at its distal end. On these grounds the fossil may be denied admittance into the genus *Porphyrio*. The degree of development of the calcaneal process, and the breadth of the distal expansion, both greater in *Gallinula* than in *Fulica*, may determine its reference to the former genus. It is a little less than one-fifth longer than the corresponding bone in *Gallinula tenebrosa*, but in its relatively larger calcaneal ridge, stronger shaft and broader articulating surfaces for the toes, it shows a species

furnished with a more robust foot. On the anconal side of the bone there is no noteworthy difference between it and its like in *G. tenebrosa*. On the palmar side the calcaneal process is half as long again and considerably higher; from its point of subsidence it is continued downwards as an angular ridge nearly to the middle of the shaft; the lateral ridges are similarly disposed, but more pronounced; the orifice of the interosseous canal much larger and more external; the foramen on the outer side of the calcaneal ridge is also relatively larger. The evidence given may perhaps be held to show that the bird represented by this bone was a moorhen, and one of larger size than the living species.

FULICA PRIOR, n.sp.

(Pl. xxxv. figs. 9a, 9b.)

Proximal and distal moieties of possibly the same humerus.—Omitting for brevity's sake a review of the points indicating that this is the humerus of one of the Rallidæ, we may turn at once to that family and attempt to ascertain the generic position of the fossil, taking only the three genera, *Porphyrio*, *Gallinula*, and *Fulica* as needful for comparative purposes. *Porphyrio* is distinguished from the others by the greater protrusion of the articular head, by the convexity of the edge of the sub-tuberos ridge, and by the smoothness of its low pectoral ridge. In none of these characteristics does it agree with the fossil. The pectoral ridge is longer in *Fulica* than in *Gallinula*; its posterior edge concave; its anterior end elevated and thickened, forming a distinct tubercle (pectoral crest); the radial tuberosity more prominent, the scapular groove wider: in these features the fossil shows so much nearer an approach to *Fulica* than to *Gallinula*, that it may without much reason for hesitation be relegated to that genus. Smaller in all its dimensions than the humerus of *F. australis*, its head is relatively narrower, with an articular surface (sub-conical in *F. australis*) more regularly convex; the tubercle of the pectoral crest feebler, as also the radial tuberosity; the sub-tuberos fossa shallower; the shaft more sharply trihedral anteriorly, more cylindrical posteriorly, and expanding more suddenly at the distal end; the endocondylar

tubercle more obtuse; the precondylar impression smaller but deeper, and separated from the articular surface by a deeper cavity between the ectocondylar tubercle and the radial condyle. The sum of these differences forbidding the identification of the existing coot with its feebler ancestor, it becomes necessary to distinguish the latter by name, and the colourless one, *prior*, is suggested for it.

PLOTUS PARVUS, n.sp.

(Pl. xxxv. figs. 10a, 10b.)

Left humerus.—There is no difficulty in recognising the arm bone of a Darter. Having its share of the characteristics of the bone in the Pelecanidæ, it has also peculiarities sufficiently well marked for comparative tests. The pectoral crest is short and low, and from it the edge of the bone runs with a straight course to the radial tuberosity; this in *Pelecanus* is a low rounded prominence, but in *Plotus* and in the fossil is obliquely truncated anteriorly, and there presents a nearly flat triangular surface; on the palmar surface of the radial side of the head is a conspicuous impression—broad and shallow in *Pelecanus*, more contracted and deeper in *Plotus*. Round the anterior edge of this depression there is in the Pelican of Australia a curved row of equal-sized and equidistant foramina; in the Darter the foramina are reduced and inconstant in number, and the one at the ulnar end of the series is by much the largest. The extinct form shows in this respect more affinity with the Pelican than with the recent Darter, its foramina being numerous and regular, but minute. The sub-tuberos ridge, bettering its name in *Pelecanus*, hardly deserves it in either the extinct or living species of *Plotus*; in both it is a compressed plate: but on the other hand the ulnar tuberosity produced and overhanging the scapular groove in *Plotus*, presents in the extinct bird a forecast of the low trihedral form of it in *Pelecanus*. At the distal end the radial condyle is elongate, oblique, with a strong sigmoid curve in *Pelecanus*, and is widely separate from the ectocondylar tubercle; in *Plotus* the separation is by a narrow groove only, and, reversing the condition in *Pelecanus*, the condyle itself presents more articulating surface on the inner than on the outer

side of its posterior surface; in this it is in agreement with the fossil. The ulnar condyle is more shortly ovate and less deeply separated from the radial in both species of *Plotus*, past and present, than it is in the Pelican. The endocondylar tubercle, reduced in *Pelecanus* to one obtuse ridge, and forming in the living Darter a convex cushion-like prominence, is in the fossil species an elongately triangular excrescence; the posterior end of the tuberosity on this side, a broad convex surface in the Pelican, is, in the recent *Plotus* and still more in the fossil, produced backwards into a sharp compressed plate beyond the articulating surface for the ulna. On the inner or anconal side of the head of the fossil we miss the very distinct tricipital ridge of *Plotus*, finding only an inferior development of it as in *Pelecanus*; but on the other hand the ancono-deltoid ridge so conspicuous in the Pelican bone is no more recognizable in the fossil than in the recent Darter. Similarly the sub-tuberos fossa is, as it is in the Pelican, much more deeply excavated than it is in the recent *Plotus*, and instead of affording to the air cells an open cancellated communication with the interior of the bone it is merely pierced, as in *Plotus*, with a few small foramina. In the distal end on this side the structure and form of *Plotus* are anticipated in every detail.

Together with the essential traits of *Plotus* this bone has, as we have seen, a few indications of extraneous affinity—perhaps we may infer that as an early form of the genus it had not attained the high specialization of its later representative. Several differences from *P. nova-hollandiae* have already been mentioned, sufficient perhaps to establish its specific rank; it may be further noted, however, that in the extinct bird the pectoral ridge is lower, the distal end less expanded, the curvatures of the shaft much less, and the size one-third smaller. The palmar impression is alike in both.

XENORHYNCHUS NANUS, n.sp.

(Pl. xxxv. figs. 11a, 11b).

Distal half of a right tibia.—An elevation of the palmar end of the rotular surface, and a well-defined continuation upon it of the rotular channel, are features of the avine tibia which grow

noticeable in the Tantalidæ, and become in the Australian representative of the Ciconidæ so pronounced as to give a distinctive facies to its articulating end in its length, narrowness, and salient edges. This we recognise at once in the fossil under view; and noting further its strong resemblance to the Jabiru's tibia in the massiveness, direction, and sculpture of the bridge traversing the intercondylar space, we cannot but admit congeneric affinity between the two. But the fossil tibia, which shows no signs of immaturity, is in the mean two-ninths less in its dimensions than the recent bone, indicating a bird but little more than half the bulk of the jabiru of the present day. There are, moreover, structural differences perceptible in it; the rotular channel is shallower; there is considerably less intercondylar space behind the posterior edge of the bridge, the canal under the bridge is relatively very much wider, the ectocondylar tubercle is not prominent, and the double flexure inwards and forwards apparent in the living jabiru between the shaft and the articular end is scarcely appreciable. It will perhaps be granted that there is on the whole sufficient justification for the claim to specific rank preferred on behalf of the bird whose bone the fossil was.

Proximal end of an ulna.—As a postscript to the above may be noted a later acquisition confirming it, so far as the size of the bird is concerned; unfortunately its worn condition unfits it for description.

OTIDIDÆ, gen.ind.

(Pl. xxxv. fig. 12.)

Proximal half of a right scapula.—In the majority of birds within the writer's range of observation, the glenoid fossa rests upon an expansion to a greater or less extent of the head of the scapula. From this the shaft generally narrows rapidly for a space, then expands and flattens to form the blade. In a few instances among Raptores, and again among Pigeons, the palmar edge of the glenoid process is slightly recurved and the surface beneath it rendered thereby a little concave; in the Bustard (*Choriotis*) this is carried to a much greater extent. Here the lip is distinctly reflected, and the side of the process at its distal half is converted

into a broad shallow groove for insertion of ligament, but this groove not being sunk below the general surface of the bone has no definite boundaries. It has so in the fossil referred to this family, for here the ligament is inserted into two deep confluent excavations at the base of the process. If the presence of the groove be permitted to guide us to the Otididæ, its condition showing the attachment of very strong ligaments will, in view of the superior size and massiveness of the bone itself compared with its homologue in *Choriotis*, tend to confirm the guidance. Though not greatly ($2\frac{1}{2}$ mm.) wider at the base of the glenoid process than the scapula of a large male Bustard, its thickness more than half as great again, is disproportionate, and shows, other things being equal, a much more powerful bird. Its general shape is that presented in *Choriotis*; it has the same peculiarity, an almost equal width from the glenoid process to the commencement of the blade. On the outer dorsal side the general resemblance to *Choriotis* is much greater than to any other scapula compared with it, but there are notwithstanding differences forbidding ascription to that genus. The ventral margin between the insertions of the *supraspinatus* and *serratus parvus anticus*, is broadly convex, throwing the *spinatus* insertion to the upper edge of the outer surface of the bone, the *serratus* insertion to the inner edge of the ventral margin; the glenoid process is shorter but of greater vertical extent, and the acromial process is but slightly concave at its base, and is separated by a distinct notch from the dorsal end of the glenoid process. On the inner surface the bone is throughout remarkably convex transversely and straight longitudinally; there is no ridge or other tract for the insertion of the *sub-scapularis*. Unfortunately the articular process and the greater part of the acromial process have been removed by fracture and abrasion.

In the absence of a skeleton of any member of this family other than *Choriotis*, it is impossible for the writer to determine the genus to which it belongs. The task is left to those who have better means of accomplishing it; if it have been made to appear probable that the Bustards were represented in the old avifauna of Queensland, some progress will have been made.

DROMAIUS PATRICIUS, n.sp.

(Pl. xxxvi. figs. 13a, 13b, 13c.)

Proximal end of right tibia.—The modifications which have taken place in this part of the skeleton during the evolution from this species of the present emu, *D. novæ-hollandiæ*, are not inconsiderable, as will be seen from the following memoranda of the discrepancies between them. In the fossil the interosseous ridge for the attachment of the fibula commences much higher on the shaft, and the surface of the shaft between the ridge and the outer condyle is much more convex, the transverse thickness of the bone at this point thereby becoming greater. In front of the outer end of the outer condyle, the surface forming in the recent emu a circular basin with small pits on its inner margin for insertion of ligament, shows in the fossil a slight and irregular depression, chiefly occupied by a large ligamentous pit situated much nearer the outer edge of the bone. The ectocondylar ridge, thick and obtusely edged in *D. novæ-hollandiæ*, is in the extinct species compressed, and descends with a sharp edge far below the level of the fibular ridge, prolonging the channel between it and the procondylar ridge. Without allowing for loss by abrasion of the edges of the bone, the transverse measurement of the condylar surface is much the greater in the fossil. On the inner side the procondylar ridge is also seen to descend lower upon the shaft, causing an increase of surface for muscular attachment between its edge and that of the articular surface. In most of its remaining features the fossil departs but little from the bone of the recent species; it represents a bird of probably the same average size, but with at least one difference—a stouter and more muscular leg.

Distal end of right tibia.—The comparative shortness of the leg in the extinct species is again exemplified in this fossil. Considerably larger in all its dimensions than a recent bone of average size, its thickness anteroposteriorly at the end of the shaft is to the greatest breadth of its rotular surface as 2 to $2\frac{1}{2}$, whereas measurements at the same points of the recent bone give a ratio of 2 to $2\frac{2}{3}$. The rotular surface is also relatively longer fore and aft to a conspicuous extent, and less concave transversely,

but this latter character is perhaps in some measure due to abrasion of its edges. On the palmar surface the eminences and ridges for muscular insertions are very much as in *D. novæ-hollandiæ*, the differences in themselves being scarcely of specific value.

Left coracoid.—The coracoids of living Ratitæ are so strongly differentiated from each other, as well as from those of the Carinatæ generally, that there is but little difficulty in recognizing one of them in the fossil state within generic limits. The present subject is clearly the coracoid of an emu, but having been broken away forcibly from the scapula below its line of confluence therewith, its clavicular process having been lost with the missing portion, and the articular part of its humeral process being also absent, it affords in its remainder but scant guidance to its specific identity. Its proportions are not greatly different from those of *D. novæ-hollandiæ*; in the least width of the shaft, it is, however, one-tenth narrower, and consequently it has a slender appearance. In *D. novæ-hollandiæ* a canal passes through the inner edge of the shaft about the middle; no trace of this is to be found in the fossil, in which again the pneumatic foramen beneath the humeral process is larger, and is approached by a short but deep groove in the surface of the shaft. In the existing emu, so far as the writer has observed, there is also a foramen similarly placed, but quite minute and opening directly on the convex surface of the bone. On the small portion remaining of the upper edge, appearances do not favour the idea that it supported the clavicle which in *D. novæ-hollandiæ* rests on its inner third. This bone, showing in its proportions a line of departure from the living species opposite to that indicated by the tibia above noticed, may represent a second extinct species, but as a more rudimentary wing may well have co-existed with more powerful legs, the contrary is equally probable, and it must therefore be provisionally referred to *D. patricius*.

The fossils so referred are from King's Creek, and with the exception of *Dinornis queenslandiæ*, nob., are the only bird bones which have reached the hands of the writer from that part of the Darling Downs. From the absence of waterbirds and other aquatic vertebrates from the eastern slope of the Downs, and their

abundance at a lower level of the drainage area, it may perhaps be legitimate to infer that the uprise which has taken place has not greatly disturbed the relative levels of the Condamine watershed.

As with the mammals, so with the birds of this period, a considerable number of genera still extant had become established and specifically differentiated, but materials not dealt with in this notice tend to show that they were mingled with many others which have become extinct.

Postscript.—Since the paragraph headed *Nyroca australis* was written, the improbability of this species being represented by the fossil bone in question, has become more apparent to the writer. Finding recent species, for example *Platylea flavipes* and *regia*, more nearly approaching identity in certain of their bones than do the fossil species and *N. australis*, he is now disposed to give difference of epoch its full weight. And since in a fauna characterized by a majority of extinct genera, it is more likely than not that all the species of genera reaching to the present time were distinct from those that are now, he concludes that a name, *reclusa*, appropriated to a second extinct *Nyroca*, will be justifiable.

EXPLANATION OF PLATES XXXIII.-XXXVI.

- Fig. 1. — *Nyroca robusta*, right humerus (back view).
 Fig. 2. — " " left coracoid (back view).
 Fig. 3. — " *australis** left coracoid (back view).
 Fig. 4a. — *Anas elapsa*, left tibia (front view).
 Fig. 4b. — " " left tibia (back view).
 Fig. 4c. — " " proximal end of left femur (back view).
 Fig. 5a. — *Dendrocygna validipinnis*, left humerus (front view).
 Fig. 5b. — " " left humerus (back view).
 Fig. 6. — " " right ulna (back view).
 Fig. 7a. — *Porphyrio reperta*, right metatars (front view).
 Fig. 7b. — " " right metatars (back view).
 Fig. 8a. — *Gallinula strenuipes*, left metatars (front view).
 Fig. 8b. — " " left metatars (back view).
 Fig. 9a. — *Fulica prior*, proximal end of left humerus (back view).
 Fig. 9b. — " " distal end of left humerus (back view).
 Fig. 10a. — *Plotus parvus*, left humerus (front view).
 Fig. 10b. — " " left humerus (back view).
 Fig. 11a. — *Xenorhynchus nanus*, right tibia (front view).
 Fig. 11b. — " " right tibia (back view).
 Fig. 12. — *Otididæ*, Gen. incert., right scapula (back view).
 Fig. 13a. — *Dromaius patricius*, left coracoid.
 Fig. 13b. — " " right tibia, proximal end.
 Fig. 13c. — " " right tibia, distal end (front view).
 (All the figures natural size).

* *N. reperta* (vide *Postscript supra*).

DESCRIPTION OF A NEW SPECIES OF *PIEZORHYNCHUS*, FROM THE NEW HEBRIDES ISLANDS.

BY DR. E. P. RAMSAY, F.R.S.E., &c.

PIEZORHYNCHUS SERICEUS, sp.nov.

The lores, sides of the face, ear-coverts, throat, hind-neck, under tail-coverts, and entire under surface of the body silky white; upper tail-coverts white, black at the base. The front and top of the head from the bill to the nape, the interscapular region, a narrow pectoral band, and the back, clear black; scapulars and greater wing-coverts white with remains of a black shaft-line; shoulders and primary coverts black, those of the latter adjacent to the secondaries occasionally mottled with white; some of the secondary coverts all white; primaries black above, brownish-black below, the margin of their inner webs near their bases, and all the under wing-coverts and axillaries white. Tail black above, largely tipped with white, which colour occupies nearly the whole of the inner web on the outer feathers, leaving only a narrow margin of black on some. Bill black; tarsi and feet lead-colour.

The bill is rather slender and narrow, with the bristles weak.

Length, 6 inches; wing, 3·1; tail, 2·8; tarsus, 0·85.

Remarks.—This very neat and elegant species, belonging to the purely black and white section, including *P. verticalis*, Sclat., was procured by Captain G. Braithwaite, of the Mission Ship 'Day Spring,' while in Bougainville Channel, on the mainland of Santo, New Hebrides, about two miles inland.

This species might easily be mistaken for *Lalage banksii*, Gray (Brit. Mus. Cat. Aves, Vol. IV., p. 100, sp. 11; Gray in

"Brenchley's Cruise of the Curagoa," App. p. 372, pl. 10). It differs, however, both from the description in the British Museum Catalogue and from Brenchley's figure in having black bases to the upper tail-coverts, no distinct eyebrow, and in having the white of the throat extending round the hind-neck, the narrow pectoral band joining the interscapular region, no buff on the under surface, and chiefly in not being a *Lalage*, but *Piezorhynchus*.

NOTES ON THE FAUNA OF THE BELLENDEN-KER RANGES.

BY DR. E. P. RAMSAY, F.R.S.E., &c.

In January last Messrs. Cairn and Grant collecting for the Australian Museum, returned from a trip to the table lands of the Bellenden-Ker Ranges of Queensland, bringing with them an interesting collection of Mammals and Birds; among the former class I find two new species in addition to those already known from that district. The following is a list of the Mammals inhabiting the Brushes on the slopes and tableland of the range of mountains known as Bellenden Ker, of which the Museum has obtained specimens :—

HOMO SAPIENS, *var. AUSTRALIS*.

2 Crania.

1 Adult female mummy, dried.

PLEOPODIDÆ, *Owen*.

HYPSIPRYMNODON (Pleopus) MOSCHATUS, Ramsay.

P.L.S. N.S.W. Vol. I. p. 33.

This remarkable form of the Marsupialia, for which Sir Richard Owen has formed the family *Pleopodidæ* (full-footed *Macropodidæ*), is the only one yet recorded of the *Macropus* section in which five toes are found. It would perhaps be better to consider it as a sub-family of *Macropodidæ* under the name of *Pleopodince*, and holding equal rank with the *Macropodince*. The dentition is purely *Macropodus* and is almost identical with that of *Bettongia* and *Hypsiprymnus*.

The "Musk Rat," under which name it is known to the settlers in the Rockingham Bay and Cairns Districts, is far from being common. I obtained five specimens in 1874, but since then two only, although a careful search has been made for them by several collectors in both of the above-named districts. An important paper on this anomalous Marsupial will be found in the "Transactions of the Linnean Society of London" (2nd Series, Vol. I. p. 573, pl. 71-72), by Sir Richard Owen, C.B., F.R.S., &c.

Only one specimen was obtained by the Museum collectors during last season (1887).

DASYURUS GRACILIS, sp. nov.

$$\text{I. } \frac{4.4}{3.3} \cdot \text{C. } \frac{1.1}{1.1} \cdot \text{P-M. } \frac{2.2}{2.2} \cdot \text{M. } \frac{4.4}{4.4} = \frac{22}{20} = \text{Total, 42.}$$

Total length, about 23 inches.

Body from snout to base of tail, 13 inches.

From snout to eye, 1.40 inches.

. From snout to base of ear in front, 2.40 inches.

Length of ear from base in front, 0.75 inch.

Fore-arm, 2.20 inches.

Fore-foot without nails, 1.50 inches.

Hind-limb, 2.70 inches.

Hind-foot, 2.30 inches.

Tail, 9.30 inches.

Length of hair beyond the tip, 1 inch.

General color, above and below, deep blackish-brown with white spots: the fur is short, close, somewhat harsh to the touch, on the limbs and tail similar, but a little shorter on the latter, which ends in an elongated tuft of hair 1 inch to 1.50 in length on the upper side only, the hair on the under side being very short. The white spots are largest and sometimes confluent on the sides of the body and basal half of the tail, and also on the inner sides of the limbs and the belly; on the remaining portion of the tail, the limbs, and

the back, the white markings are confined to small spots, some linear in form; a few spots of the same on the head, feet, and hands. All the under surface and the head is of the same blackish-brown tint as the rest of the body. The animal is of slender form, the head about twice as long as broad, being in length about 3 inches by 1.50 across the zygomatic arches. Canines strong, and comparatively large. Tail long, slender, and tufted at the tip; the fifth toe is very small and without a nail; the remaining toes of both fore and hind limbs with comparatively strong nails. Whiskers black and long, extending to the shoulders. The description is taken from a stuffed specimen.

Were it not for the dentition I should be inclined to consider the specimen under consideration to be immature, as we already know of a very large species of *Dasyurus*, even larger than *D. maculatus*, inhabiting the Rockingham Bay district and the Bellenden-Ker Ranges.

Mr. Robert Johnstone, P.M., when Inspector of Police in these districts sent me the skull of a species, which measured considerably more than that of any of the southern individuals with which I have met. This northern form may be the representative of the *D. maculatus* of N. S. Wales and other colonies, and will probably prove to be a new and undescribed species.

The coloring of the present new species is entirely different from that of any previously described.

PHALANGISTA JOHNSTONII, sp. nov.

$$I. \frac{3.3}{1.1} \quad C. \frac{2.2}{1.1} \quad P.M. \frac{2.2}{1.1} \quad M. \frac{4.4}{4.4}$$

Length of skull, 3.20 inches.

Greatest width behind the zygomatic arches at base, 1.60 inches.

Width across forehead, 0.60 inches.

From incisors to large premolar, 1.0 inch.

Space between last incisor and canine, 0·10 inch, and slightly less than that between first and second premolars.

Length of range of molars and large premolar, 0·90 inch.

Width of third molar, 0·20 inch; length of same, 0·20 inch.

Width of two lower incisors, 0·30 inch.

Width of palate measured between the first molars, 0·70 inch.

The anterior palatal foramina extend from the exterior margin of the third incisor to the posterior margin of the canine; its length is 0·27 inch; its greatest width is anteriorly, and scarcely equals one-tenth of an inch. Length of palate from the incisors, 1·10 inches; width of palate between the small first premolars, 0·60 inch; between large premolars, 0·70 inch. The forehead between the lateral, or interorbital, ridges is deeply depressed, its width, 0·55 inch. Width across the zygomatic arch at posterior margin of orbit, 0·70 inch; nasals, 1·20 inches. Greatest width of skull across posterior portion of zygomatic arch, 1·90 inches; greatest length from incisors to occipital foramen, 3·25 inches. Rami—Length of condyles to interior base of incisors, 2·30 inches; width across from outer margins of condyles, 1·80 inches; greatest height from base to top of ascending ramus, 1·10 inches; length of mandibular ramus from 4th molar and including the large premolar, 0·95 inch; distance between premolar and minute canine, 0·30 inch; height of mandible to base of second molar 0·45 inch; length of incisor teeth from in front, 0·50 inch. The small canines are situated at the root of the incisors, and almost touch their inner margin.

The general color above and below is of a rich chestnut-red; down the back a shade, but not a distinct stripe of blackish; tail black, bare below for the distal half of its length, the extreme tip of which is bare above and below, and frequently yellowish-white.

I have dedicated this species to Mr. Robert Johnstone, P.M., who, accompanying Dalrymple's Exploring Expedition to North-east Queensland in 1873, was the first with others of his party who succeeded in reaching the top of Bellenden-Ker.

PHALANGISTA LEMUROIDES, *Collett.*

P.Z.S. 1884, p. 385.

This species does not appear to be plentiful, but in the dense dark scrubs nocturnal animals of small size are always difficult to obtain.

PHALANGISTA ARCHERI, *Collett.*

P.Z.S. 1884, p. 381.

Many examples of this very distinct species were found; the young have the same distinctive markings as the adult, but not so well defined.

PHALANGISTA sp., *juv.*

This appears to be the young of *P. cookii*, but does not altogether agree with the examples from the Richmond River, presumed of the same species. It may be the young of *P. herbertensis*, Collett.

(*To be continued*).

ADDITIONS TO THE FOSSIL FLORA OF EASTERN AUSTRALIA.

BY R. ETHERIDGE, JUNIOR.

(Pls. XXXVII.-XXXVIII.).

Since the appearance of Dr. Feistmantel's Work on the "Palæozoic and Mesozoic Flora of Eastern Australia,"* and the Memoir by the Rev. J. E. T.-Woods, "On the Fossil Flora of the Coal Deposits of Australia,"† several additional plant remains have come to light from various geological horizons in New South Wales and Queensland.

In the present paper I purpose describing three ferns from Queensland. One is from the Lower Carboniferous of the Drummond Range, one from the Lower Mesozoic of the Ipswich Basin, and the third from the Upper Mesozoic series of the Croydon Goldfield. They will be described in the above order :—

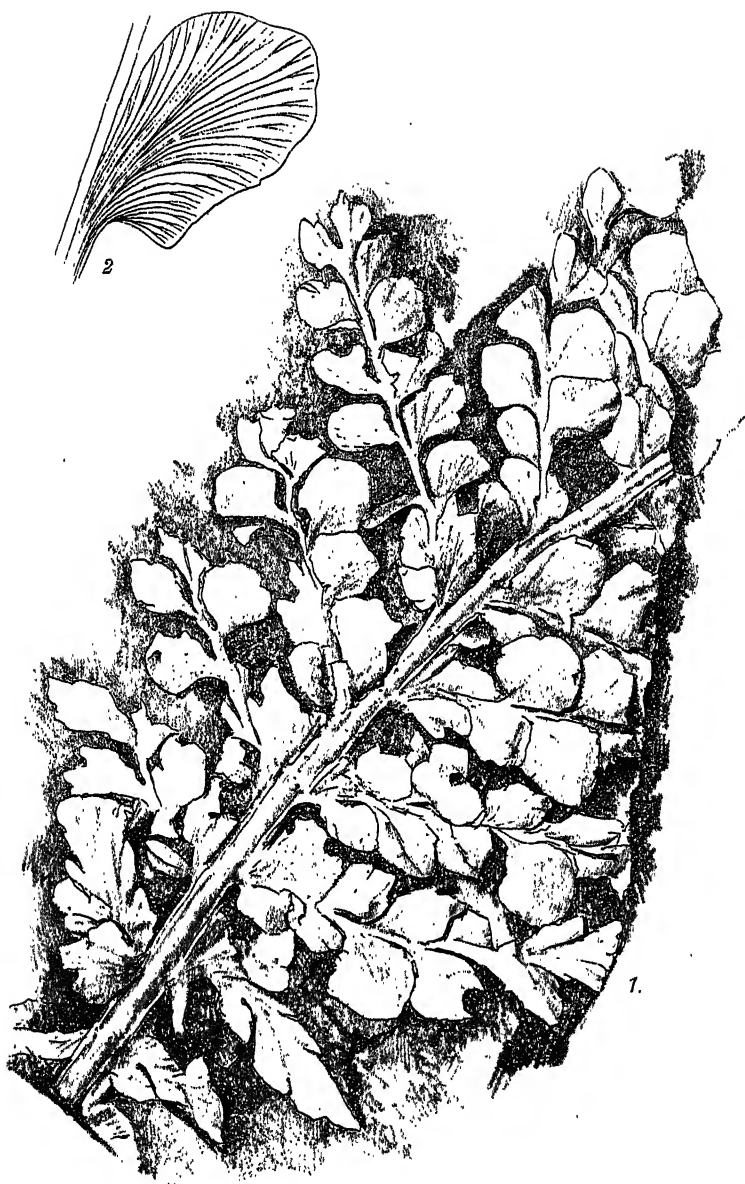
1. ANEIMITES, Dawson.

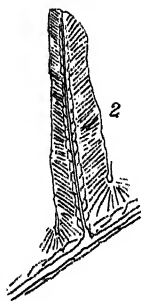
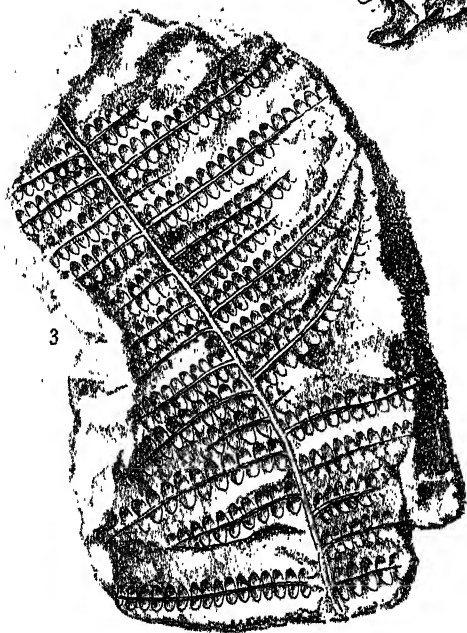
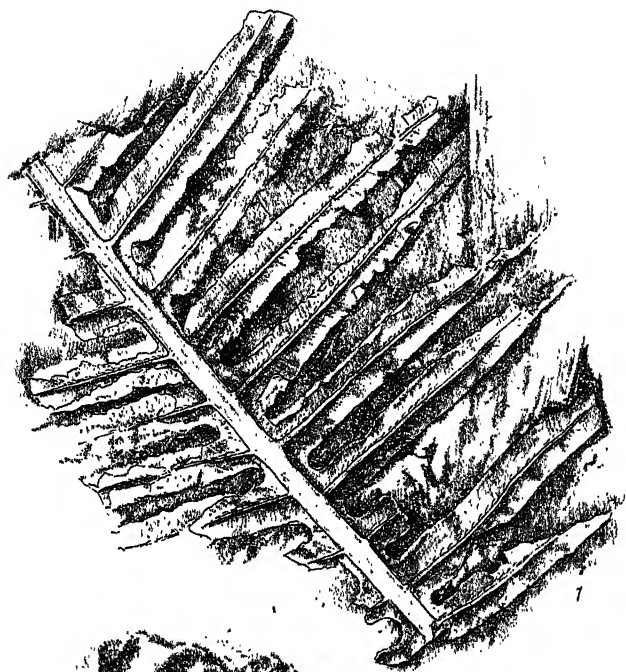
In his work previously referred to, Dr. Feistmantel has given several illustrations of the characteristic and most abundant fern of the Lower Carboniferous rocks of New South Wales under the name of *Rhacopteris inæquilatera*, Göpp., sp.

A casual examination of the fine specimen now under description would tempt the observer to place the plant in close contiguity to this species, but a further study at once reveals many important differences. Thus :—In *Rhacopteris inæquilatera*, the frond, so far as it is at present known to us, is simply pinnate ; in the specimen it is bipinnate. The pinnæ of the former are

* Palæozoische und Mesozoische Flora des östlichen Australiens. *Palæontographica*, 1878-79, Suppl. Bd. III. Leif. 3, Hefts 2-4.

† Proc. Linn. Soc. N. S. Wales for 1883, [1884], p. 37.





narrow, long, rigid, and erect; in the latter more or less flabellate, and to some extent spreading, or rather expanding. The pinnules in *R. inaequilatera* are stiff, rigidly fan-shaped, and with strongly serrated edges, the veins after dichotomisation passing one to each division of the margin. But in our fern the leaflets are ovate-pyriform, with simple margins, and veins several times dichotomous. The result of this arrangement is that a much more graceful outline is given to a far laxer frond than exists in *Rhacopteris*.

The resemblance between the two ferns, so generally alike and yet so different in detail, gives rise to the question—to what genus should the Queensland plant be referred? A really scientific method has now come into vogue for the determination of fossil ferns by their fructification, when observable, a method far in advance of the old separation, simply depending on the nervation and form of the pinnule, in conjunction with the form of the frond. In the present instance, the absence of fructification leaves no choice but to employ the form of the leaves and their arrangement as our guide. This undoubtedly brings our plant in close relation with the group of ferns represented by such genera as *Cyclopteris*, *Archæopteris* (= *Palæopteris*), *Rhacopteris*, *Adiantites* (so-called), and others. The resemblance is specially strong to *Cyclopteris* and *Adiantites*, but I believe Prof. Göppert, the author of the latter, abandoned his genus in favour of *Cyclopteris*.

The most philosophical handling of this old Brongniartian genus, which has yet appeared, so far as the subject is known to me, is that by Principal Sir W. Dawson, F.R.S., who has given the following classification.*

Cyclopteris, Brongniart (restricted), after the type of *C. flabellata*, Brong. Carboniferous. With three sections.

(a). *Archæopteris*, Dawson; typified by *Cyclopteris hibernica*, Forbes, and to supersede Schimper's genus, *Palæopteris*. The pinnules are ovate and decurrent on the rachis. Devonian.

* The Fossil Plants of the Devonian and Upper Silurian Formations of Canada. Geol. Survey Canada, 1871, p. 48.

- (b). *Aneimites*, Dawson ; typified by *Cyclopteris acadica*, Dawson ; with more or less flabellate leaves. Carboniferous.
- (c). *Nephropteris*, Schimper ; after the type of *Cyclopteris orbicularis*, Brongniart. Carboniferous.

Dawson regarded his *Aneimites* as a sub-genus of *Cyclopteris*, but if the separation from the latter is worth anything, to my mind it merits generic rank, and will be so considered here.

In originally proposing *Aneimites*, * Principal Dawson evidently had in mind the British Coal Measure fern, *Sphenopteris adiantoides*, Lind. and Hutton, so much so, that to this he at first referred the plant afterwards called by him *Aneimites* (*Cyclopteris*) *acadica*.†

This being the case we may justly include *Sphenopteris adiantoides* in *Aneimites*. Furthermore, it is to be regretted that Principal Dawson did not refer to this obvious fact in his second and more detailed account of the Canadian fern.

The strong resemblance borne by the Queensland specimen to the British *Aneimites adiantoides*, L. and H., sp., and in a less degree to *A. acadica*, Dn., renders it exceedingly probable that it should be placed in the genus in question. I shall therefore speak of it in future as *Aneimites austrina*.

My friend Mr. R. Kidston, F.G.S., reminds me that *Cyclopteris valida*, Dawson, which has been taken as the type of his genus *Triphylopteris* by Schimper, is undistinguishable from *Aneimites*, a fact in which I cordially agree.

The pinnæ of *A. austrina* are about three inches long, the entire frond, as preserved, occupying a space of more than one foot. The frond is generally flabellate, and bipinnate, there being portions of eight pinnæ on one side, alternating with seven on the other, of a rather broad rachis. The pinnæ are elongate and generally narrow, hardly expanding from a uniform width, and decreasing

* Quart. Journ. Geol. Soc. 1860. XVII. p. 5.

† The Fossil Plants of the Lower Carboniferous and Millstone Grit Formations of Canada. Geol. Survey Canada, 1873, p. 26.

but very slowly in width towards their apices. The pinnules are ovate or obovate-pyriform, and retain their form throughout the length of each pinna, until near their apices, when the pinnules become longer and more wedge-shaped, the pinna terminating in a uni-, bi-, or tri-lobed pinnule. The pinnules have likewise a somewhat flabellate aspect, seldom sub-imbricate, or overlapping one another, but separated by an interspace, which is certainly at times rather inconspicuous. The proximal margins of the pinnules are parallel to the rachis, and during fossilization some of them have slightly infringed on the latter.

The two lowest pinnæ exhibit a marked difference from those above them. The second pair are the best preserved, and are deeply lobate and pinnatifid, conforming to the habit we are accustomed to associate with the pinnules in some Sphenopterids. The divisions of the pinnæ in question have quite lost their pyriform, or obovate outline; but are irregularly trilobate, and to some extent incised, the apical lobe being the largest, and more or less lanceolate. The nerves are but very faintly visible on the specimen occupying the greater portion of the slab, but are shown on a smaller example lying near. The lower pinnæ seem to be only a modification of the lobate apical pinnules of the higher pinnæ, as seen on the third to the right from the bottom of the specimen, and the fifth and sixth on the left hand. But they are not the basal, as the lower portion of the frond is concealed by matrix.

The resemblance of *A. austrina* to *A. adiantoides* consists in the similar obovate or pyriform pinnules, with a like modification of the apical pinnules. The two ferns, however, differ greatly in the relative sizes of their respective portions, whilst in the British species there is no appearance of the dissimilar lower pinnæ.

From *A. acadica*, Dn., the form of the pinnules will at once distinguish it.

The following are the abbreviated specific characters :—

ANEIMITES AUSTRINA, sp. nov.

(Pl. XXXVII.)

Sp. Char.—Frond elongately expanding, bipinnate; rachis moderately broad, carinate. Pinnæ subalternate, elongate, attenuating but slowly towards their apices, almost parallel-sided; rachis carinate, frequently zig-zag; pinnules petiolate, rather inequilateral, varying in shape on different parts of the frond, but generally ovate or obovate-pyriform, sometimes a little sub-imbricate, proximal or inner margins parallel to the rachis; upper and distal margins broadly rounded, and all entire; pinnules towards the apices of the pinnæ becoming more truly pyriform, or pyriform-deltoid, the terminal leaflets being uni-, bi-, or trilobed; pinnules of the lowest (preserved) pinnæ lobate, the apical lobe more or less lanceolate. Petioles short and straight. Nerves well marked, numerous, bi- or perhaps tridichotomous.

Loc. and Horizon.—I am indebted to Mr. James Smith, of Rockhampton, for an opportunity of describing this elegant fern. He states that it was found by Mr. A. E. Holmes, station manager, “where the latitude of Springsure, and the longitude of Bogan-tungen intersect.” (According to Mr. R. L. Jack, this would be about Mount Budge on the Drummond Range, Central Queensland).

2. PHLEBOPTERIS.

The fern from the Ipswich Coal Measures, is certainly a member of the Dictyopteridæ, and apparently referable to the genus *Phlebopteris*.

This section, sometimes called a sub-order, sometimes a family, is already represented in the uppermost Palæozoic and Lower Mesozoic rocks of Australia, by the genera *Glossopteris*, *Sagenopteris*, and *Gangamopteris*. According to Schimper,* the fronds are many times pinnate, or pinnatifid, and the nerves reticulate in some degree or other.

* *Traité de Paléontol. Végétale*, 1869, I. p. 624.

Of the many interesting genera contained in this family, *Phlebopteris*, as emended by Schimper, is one of the most so, from its general resemblance in form to certain members of the Pecopteridæ—to wit, the genus *Alethopteris*. In the latter the pinnules are simple, usually entire, always more or less strap-shaped, decurrent on the rachis, or confluent, and coriaceous, whilst the veins are simple and forking. Now in *Phlebopteris* we again observe the more or less elongate, and often strap-shaped decurrent pinnules, but with a wholly different venation—the costa or mid-rib of each having on each side of it a border of reticulate spaces, from which the veins take their rise. This reticulation in various degrees of development is characteristic of the Dictyopteridæ, but Schimper has wisely restricted *Phlebopteris* to those possessing but a single series of reticulations on each side of the mid-rib. His words are—“à une seule série d’arcs de chaque côté de la côte.”

Amongst a collection of plants in the Australian Museum from the Ipswich Coal Measures on the Darling Downs, near Toowoomba, I observed some fairly good specimens of what appeared to be an *Alethopteris*; but the narrow elongate pinnules, springing horizontally from the rachis did not allow the plant in question to fit happily into that genus. Close examination of the better-preserved examples, revealed a small, and very delicate reticulation, consisting of small, elongate, and irregular vesicles, if I may call them so, lying close to the mid-rib of each pinnule. The appearance presented by this reticulation is very well shown in Schimper’s figure of *Phlebopteris affinis*, Schenk.*

Portions of this fern, which I propose to call *Phlebopteris alethopteroides*, are as much as seven inches in length, so that the pinnæ must have attained a no mean size. Individual pinnules, although imperfect, still measure two and a-half inches in length, their breadth, which is very disproportionate to the length, remaining very uniform. The greatest width I have observed a pinna to attain, and that again imperfect, was four and a quarter inches. The pinnules are, on an average, from a quarter of an inch

* *Loc. cit.* Atlas, t. 39, fig. 15.

to five-sixteenths wide, and are separated from one another by interspaces of about a quarter their width. A good deal of irregularity exists in the manner in which the mid-ribs of the pinnules are given off from opposite sides of the rachis. Some are opposite, others are regularly alternate, many are sub-alternate, and others are even intermediate between these positions.

The veins are very regular, and given off at an angle which slightly varies from a right angle with the mid-rib, to one more acute. They bifurcate shortly after leaving the reticulation, and proceed direct to the margin. Along the rachis, on the confluent portions of the pinnules the veins are longer, and much wider apart.

The rachis is always broad and well-marked, being ridged and fluted; and it may not be uninteresting to note a segmentation of the stem in some of the specimens, and always at the base of the pinnules, but arising only from fracture.

The regularity and stoutness of the rachis and pinnules, give to this fern, especially when not too well preserved, almost the aspect of a Cycad.

The following are the abbreviated specific characters, which will serve to distinguish it :—

PHLEBOPTERIS ALETHOPTEROIDES, sp. nov.

(Pl. XXXVIII. figs. 1-2.)

Sp. Char.—Pinnæ large, probably elongate. Rachis strong, moderately thick or wide, and longitudinally grooved and ridged. Pinnules lingual-strap-shaped, narrow, very long, parallel-sided, alternate, sub-alternate, or opposite, very regular in appearance, and equidistant, markedly confluent. Mid-ribs strong, tapering gradually, and extending to the apices of the pinnules; reticulation small, consisting of elongate, rather irregular, scale-like vesicles; veins almost at right angles to the mid-rib, bifurcating immediately after leaving the reticulation.

Loc. and Horizon.—Darling Downs, near Toowoomba (*Australian Museum*); Ipswich Coal Measures, Lower Mesozoic.

3. DIDYMOSORUS, Debey and Ettingshausen.

Even more interesting than the plant just described is the third and last specimen from the Desert Sandstone of the Croydon goldfield, and which seems to be of a type rare in Australian Palæontology. It is, I believe, identical with the *Pecopteris gleichenoides*, Oldham and Morris, which should be placed in the genus *Didymosorus*, Debey and Ettingshausen,* one of the *Gleicheniaceæ*. This genus resembles the recent *Gleichenia*, but possesses a different fructification. The frond in *Didymosorus* is dichotomous and bipinnate, each division being very long, narrow, and nearly parallel-sided; the pinnæ are quite linear, either opposite, or sub-alternate, on a very narrow rachis.

The typical species of *Didymosorus*, *D. comptonifolia*, D. and E., occurs in the Cretaceous rocks of Aix-la-Chapelle, whilst *Pecopteris gleichenoides* is found in the Mesozoic rocks of the Rajmahal Series of India.

The Australian plant corresponds with the description of the genus in every particular, but we do not possess enough of the frond to show dichotomisation. It is either identical with the Indian species, or a mere variety of it, although it has points in common with the European form. Unfortunately for the purposes of strict identification, the specimens are preserved in a fine siliceous grit, which has obliterated all evidence of fructification, if any such existed, and also of the nervation. As regards size the specimens now under description agree entirely with the Indian species, but seem to be rather smaller than the European, the general width of a pinna being two-sixteenths of an inch.

The figures of Oldham and Morris* represent portions of fronds as long as seven inches, and two and a-half inches wide, but the largest of our specimens is four inches long, and one and a quarter

* Denks. K. Akad. Wissensch. Wien, 1859, XVII. 1 Abth. p. 186.

* Pal. Indica (Gondwana Flora), 1860, I. pt. 1, fas. 6. p. 45, t. 25, t. 26, f. 2 and 3.

wide. The pinnæ are certainly narrower than *D. gleichenoides*, but as this point may entirely depend on the position occupied by the specimen in the frond, it cannot be taken as a point of much importance.

As no fructification has been seen, it would perhaps be more advisable to place the Croydon fossils, "characterized by the slenderness of the whole leaf, and by the delicate linear form of the pinnæ" (Feistmantel), in *Gleichenites*, as Oldham and Morris have done with their species; although, be it noted, they refer to the general resemblance of the latter to *Didymosorus*. On the other hand, so close a resemblance can hardly have existed, without some corresponding affinity in the productive state, and I shall therefore venture to place *Gleichenites gleichenoides* in *Didymosorus*, and provisionally refer the Australian form to it.

The general relations of this peculiar fern have been ably discussed by the late Messrs. Oldham and Morris; but in their description they state the pinnæ are alternate. Their figures, however, show as much variation from alternate to opposite as do our specimens. At the same time the pinnæ are apparently closer in the Indian fossils.

The small ovately-pointed pinnules, entirely decurrent as they are, give to the pinnæ a fret-saw-like appearance, and are evidently a very characteristic feature of the fern. In consequence of the gritty nature of the matrix the venation is obscure, but Oldham and Morris say generally—"The nervation of the pinnules, is very indistinct, but seems to consist of a small flexuous mid-rib becoming nearly obsolete at the end of the pinnules, and from which secondary veins pass off obliquely at irregular intervals."*

DIDYMOSORUS (?) GLEICHENOIDES, Old. and Mor., var.

(Pl. XXXVIII. fig. 3.)

Pecopteris (Gleichenites) linearis, O. and M., Mem. Geol. Survey India, II. p. 324.

* *Loc. cit.*, p. 46.

Pecopteris (*Gleichenites*) *gleichenoides*, O. and M., Pal. Indica (Gondwana Flora), 1862, I. pt. 1, p. 45, t. 25, t. 26 f. 1, 3.

Gleichenites (*Gleichenia*) *bindrabunensis*, Feistmantel, *Ibid.* p. 93.

Gleichenia bindrabunensis, Schimper, *Traité Pal. Veg.* 1869, II. p. 670.

Sp. Char.—Frond [bipinnate], long, narrow, parallel-sided, tapering but very slowly. Pinnæ long and linear, opposite or sub-alternate, rarely alternate, obtusely pointed at their apices, springing from the rachis at right angles, and in close contiguity to one another. Rachis straight, non-flexuous, small and delicate. Pinnules short, entire, broad-ovate, sub-alternate on the pinnæ, and decurrent.

Loc. and Horizon.—True Blue Hill, Croydon goldfield, North Queensland (R. L. Jack, Esq., &c.); Desert Sandstone, Upper Mesozoic.

EXPLANATION OF PLATES.

PLATE XXXVII.

Fig. 1.—*Aneimites austrina*, Eth., jun. Portion of a large frond, showing the variation in the form of the pinnules ($\frac{2}{3}$ nat. size).

Fig. 2.—Pinnule with venation ($\times 3$).

PLATE XXXVIII.

Fig. 1.—*Phlebopteris clethopteroides*, Eth., jun. Portion of a frond, with form and arrangement of the pinnules (nat. size).

Fig. 2.—The same. Pinnule enlarged to show the reticulation along the midrib ($\times 3$.)

Fig. 3. *Didymosorus* (?) *gleichenoides*, Old. & Mor. Portion of a frond, with form and arrangement of the pinnules (nat. size).

DESCRIPTIONS OF TWO NEW AUSTRALIAN FISHES.

BY E. P. RAMSAY, F.R.S.E., AND J. DOUGLAS OGILBY, F.L.S.

PARASCYLLIUM COLLARE, sp.nov.

The head is broad and flattened above, the snout rounded. Eyes large; the interorbital space equal to the length of the snout; the distance between the tip of the snout and the mouth is three-fifths of that between the angle of the mouth and the eye. Spiracles very small. Nasal valves each furnished with a pair of small cirri. A well-developed fold from the angle of the mouth, extending along the lower jaw to a distance equalling the interspace between the two folds. *Teeth*—In many rows in both jaws, each with a lateral cusp on either side. *Gill-openings*—The four anterior ones small, and their own length apart; the fifth twice as large and contiguous to the penultimate, these two being above the base of the pectoral fin. *Fins*—The first dorsal commences about the middle of the total length, and is the same size as the second, which commences nearer to the first than to the end of the caudal; the anal is lower, but with a longer base than the second dorsal, and is situated entirely in front of that fin; ventrals considerably in advance of the first dorsal, their outer edge obliquely truncate, and forming a very acute angle with the inner edge; lower caudal lobe large, posterior rounded. Skin very rough when rubbed forwards, owing to the scales, which are numerous and closely set, terminating in an acutely angular point. *Colors*—Rich brown, with six broad darker transverse bands; the first, extending from a short distance in front of the first gill-opening on either side to the third, and being broadest on the occiput, is of a deep chocolate brown; the second, behind the tips of the pectoral fins, much lighter in color, a character common to the four following bands; between and even on all the bands

except the first are large roundish spots of a similar color to the first band, and also on the dorsal, caudal, and ventral fins; pectorals and anal pale brown; snout and an oblong spot beneath each eye brown; lower parts dull white.

In coloration this handsome Dog-fish is intermediate between *P. variolatum* and *P. nuchale*, having the round dark spots on the body and fins of the former, and the nuchal collar of the latter, but without its distinct white spots; while the position of the anal is as described by Dumeril, that of the mouth as in Prof. McCoy's species.

Our specimen is over thirty inches long, and was taken by the trawl in deep water off Port Jackson, and kindly presented to the Australian Museum by Mr. Oscar Meyer; it is an adult male. Register number, I. 1874.

HISTIOPTERUS ELEVATUS, sp.nov.

B. vi. D. 7/24. A. 3/14. V. 1/5. P. 16. C. 17. L.I. 66.
I., tr. 14/50 ca.

The length of the head is three and one-fourth, the height of the body two and one-third in the total length. The diameter of the eye is three and one-fifth in the length of the head, five-eighths of that of the snout, and about one-sixth less than a diameter apart. Both the snout and the occiput are deeply concave, while the interorbital space is convex with a median groove. The lower jaw is the longer, and both it and the chin are furnished with short papillæ. The cleft of the mouth is moderate and almost horizontal, and the maxilla extends to the vertical from the anterior nostril. The preopercle is obsoletely serrated on the lower limb and the rounded angle, as is also the post-temporal bone. *Teeth*—Both jaws with a broad band of small conical teeth in front, the outer row being enlarged and slightly curved, while on the sides the bands are much narrower and the teeth more granular; there are no vomerine nor palatine teeth. *Fins*—The dorsal spines are unfortunately broken, with

the exception of the anterior three, which are short, the third being somewhat less than the diameter of the eye, while the last is much more slender than the others; the anal fin commences beneath the eleventh dorsal ray; the first spine is small, the second long and very strong, but the tip is broken off in our specimen; the ventral fins reach to the origin of the anal, and are three-fourths of the length of the head; its spine is very strong, and is four-sevenths of the same length; the pectoral fins are long and falciform, reaching beyond the ventrals, and about equal to the length of the head; the caudal fin is somewhat injured inferiorly, but appears to have been emarginate, with the lobes somewhat acute; the length of the upper is two-ninths of the total length. *Scales*—Of moderate size, cycloid, and very thin; cheeks, a small patch above the opercle, and another above the postero-superior angle of the eye, scaly; remaining bones of the head sculptured. The pseudo-branchiæ are well developed, and the gill-rakers are reduced to mere knobs. *Colors*—Pale reddish-brown, the bony parts of the head darker, as also are the dorsal and anal spines; ventral fins and some of the middle dorsal rays black; rest of the fins colorless.

But for the difference in the number of the dorsal spines and some other minor variations, I should have been inclined to consider this to be the species described in the "Fauna Japonica" as *H. acutirostris*. Our specimen, which was obtained in the Sydney market, and measures $11\frac{1}{4}$ inches, was obtained by the trawl net in seventy fathoms water off Port Jackson. Register number, I. 1894.

DESCRIPTION OF A NEW GENUS AND SPECIES OF DEEP-SEA FISH FROM LORD HOWE ISLAND.

BY J. DOUGLAS OGILBY, F.L.S.

The three specimens examined by me, on which I have constituted the following new genus, are in the collection of the Hon. Wm. Macleay, to whom I am greatly indebted for permission to describe them. Mr. Masters tells me that they were picked up dead on the beach by Mr. Thomas Brown, and given by him to my informant, who deposited them in their present resting-place. The largest is barely two inches in length, and they are in very bad condition, so much so that I have found it impossible to give the fin formula with certainty. The genus belongs to the *Sternoptychidae*, and is very closely allied to the Atlantic genera *Argyropelecus* and *Sternoptyx*, from both of which its dentition at once distinguishes it. Appended is the description:—

STERNOPTYCHIDES, gen.nov.

Pseudobranchiæ present. Head and trunk much elevated and compressed, the latter passing gradually into the moderately long pedicle. The margin of the upper jaw is formed of the intermaxillary and maxillary, each of which bears a row of long recurved teeth at a considerable distance from one another; mandible with a similar row, one of which on either side is much more developed. Two series of phosphorescent spots along the lower side of the head, body, and tail.

STERNOPTYCHIDES AMABILIS, sp.nov.

D. 5/11-12. A. 13 (?). V. (?). P. 10 (?). C. 6/18/6 (?).

Height of body $\frac{3}{5}$ of total length. Least height of pedicle about $\frac{1}{10}$ of height of body. Length of snout about $\frac{1}{2}$ of diameter of eye. *Colors*—silvery.

NOTES AND EXHIBITS.

Mr. Etheridge exhibited the skull of an aboriginal, and in reference to it read the following Note:—

“The skull exhibited formed a portion of an aboriginal skeleton found on the western side of North Harbour. The skeleton was found about one foot below the surface protected from the covering soil by the usual flat stones. It lay in a N.E. and S.W. position on the left side, facing to the S.E., but the lower extremities were more or less drawn up towards the trunk. It was complete with the exception of the left femur and the arm bones. Measurements would show it to be the skeleton of a full-grown and probably fine man. The chief point of interest, however, is in the position of the bones of the left hand, which now lie against the same side of the head, the fingers extended and pressed into the orbit. It would appear that at burial the left arm was doubled up, and the head placed resting on the hand, as a kind of pillow. The specimen is exhibited on behalf of Mr. C. S. Wilkinson, the Government Geologist, and was found during explorations carried on by Mr. T. W. Edgeworth David, Mr. Pedley, and the writer.”

Mr. Etheridge also exhibited the fossils described in his paper.

The following note on the synonymy of *Ficus scabra*, G. Forst., was read by Mr. Maiden:—

“*Ficus scabra*, G. Forst. ; Syn. *F. aspera*, G. Forst. (‘Purple fig,’ ‘White fig,’ ‘Rough-leaved fig.’ Called ‘Flooded fig’ on the Clarence River, N.S.W.) Extends from Victoria to Queensland. *F. scabra* and *F. aspera* (so far as Australian specimens go) have been used apparently indiscriminately by some writers, and as the compiler of this note has looked carefully into the matter during a comparison of some fig-timbers for the Technological Museum, he submits the few remarks which follow, as it is most desirable to secure uniformity of nomenclature. *F. aspera* in B.Fl. vi. 174, followed by Bailey, Syn. Qd. Flora, 489 ; *F. scabra* in Muell. Cen. p. 22 ; Seemann, *Flora Vitiensis*, 249, Tab. LXIV. (*F. scabra*), LXV. (*F. aspera*). Muell. Fragm. x. 114, says—‘*Ficus scabra* (G. Forst.), includit *F. asperam* plurium scriptorum atque Benthami (B.Fl. vi.

174), dum vera *F. aspera* (G. Forst.), fructibus multoties majoribus eos *F. Caricæ* fere æquantibus facillime divellenda est, ut e delineationibus Forsteri diu ineditis a cl. Seemann demonstrabatur, conf. Fl. Vitiensis 249, t. LXIV. et LXV.). *F. aspera* apud nos multo rarior est quam *F. scabra*.' Compare also *op. cit.* vi. 196. Both Bentham and Mueller look upon *F. aspera* and *F. scabra* merely as varieties of the same species; they only differ in opinion as to which name shall stand. Seemann gives figures of *F. aspera* and *F. scabra* from Fiji, which are clearly distinct, though his illustrations may represent the most extreme forms, connected by intermediate ones. But this is somewhat uncertain, and it may also be that Seemann's statement (*op. cit.* 250), that *F. aspera*, as figured by him with larger fruits than *scabra*, extends to Australia, is incorrect. As far as I know, we have only the small-fruited form in Australia (identical with *F. scabra* of the Flora Vitiensis), and although it varies greatly in size and shape of the leaves, there does not appear to be any marked variation of the fruits. Baron Mueller in his latest work (*Cens.* p. 22, the last portion of the statement in *Fragm.* x. 114, notwithstanding), recognises only one species (*F. scabra*) for Australia, and this seems scarcely to admit of doubt. *F. aspera* should therefore be dropped altogether so far as Australia is concerned. *Addendum*—The var. *subglabra* (Benth.) of *F. aspera*, Forst. (B.Fl. VI. 175), should be included under *F. stenocarpa*, F.v.M. (*loc. cit.* 174). See also Muell. *Cens.* p. 22. It was made a distinct species (*F. subglabra*, F.v.M.) in Muell. *Fragm.* IX. 152."

Mr. Maiden also exhibited a portion of the stem of *Alyxia buxifolia*, R.Br., for the discovery of supposed medicinal properties and virtues in which, a patent has recently been taken out in this colony.

Dr. Katz exhibited an admirably finished thermostat (apparatus for cultivating micro-organisms at a fixed temperature), a donation of the Hon. W. Macleay to the Biological Laboratory of this Society. This thermostat, designed by F. Hueppe, has been imported from R. Muencke, Berlin; it is constructed of copper, and provided with a Reichert-Babes thermo-regulator

which keeps the required temperature within a few tenths of a degree for weeks. It is, for instance, not difficult to attenuate the bacillus of anthrax so as to lose its virulent effect on animals.

Mr. Rohu exhibited a fish (*Serranus cylindricus*, Günth.) from the New Hebrides, originally described from Madagascar, and subsequently recorded from Zanzibar; and he stated that he was indebted for its determination to Mr. J. D. Ogilby, who believed this to be the first time it had been recorded from the Pacific. Also a carved shield, probably from Fiji, very similar to that figured in a recent issue of the "Sydney Mail" as one of those in use by the Botany Bay natives at the time of Captain Cook's visit.

Mr. H. Deane exhibited another supply of fossils from Bredbo (*vide* Abstract for July last); and, on behalf of Mr. Williams a monstrous kitten with double body.

Mr. De Vis sent for exhibition the bones of fossil birds described in his paper.

The President exhibited, for Dr. Woolls, specimens of *Dodonaea attenuata*, *D. viscosa*, *D. boroniifolia*, &c., and of *Heterodendron oleifolium*, referred to in his paper. Also two species of Eucalyptus, *E. stellulata* var. *microphylla*, and *E. stricta*, from the Blue Mountains. Dr. Woolls was desirous to hear of any shrubby species not with *reniform*, but with parallel-celled anthers.

The President also exhibited a number of fossils which he had collected some years ago from the Devonian (?) mudstones of Cudgegong, near Rylstone, and which appeared to belong to the family *Receptaculitidae*, a Palæozoic group of Hexactinellid Sponges (Dr. G. J. Hinde, Q.J.G.S., 1884, p. 795). He now exhibited them for comparison with the nodular structures from Bredbo, which were laid before the July meeting by Mr. Deane, and supplemented by an additional exhibit this evening. Also other specimens of the same family from the hard limestones of the county of Argyle. They appear to approach *Ischadites* rather than *Receptaculites*, but require a more particular examination. Also a Crustacean fossil from the limestone at Bungasalahy Creek, Lake Bathurst, obtained by the late Professor Thomson of the Sydney University, and probably referable to the Eurypteridæ.

WEDNESDAY, 31ST OCTOBER, 1888.

The Hon. James Norton, M.L.C., in the Chair.

Mr. J. P. Grant was introduced as a visitor.

The Chairman announced that two Excursions had been arranged for the ensuing month :—

(a) November 3rd—To Clifton, Illawarra Line. To leave Redfern Station by the 9.35 a.m. train.

(b) November 17th—To meet at Circular Quay at 10 a.m. for a harbour cruise. A steamer and refreshments will be provided.

DONATIONS.

“Journal and Proceedings of the Royal Society of New South Wales.” Vol. XXII., Part 1 (1888). *From the Society.*

“The Journal of the Linnean Society of London (1887-88)—Botany.” Vols. XXIII. (Nos. 152-155); XXIV. (Nos. 159-162); “Zoology.” Vols. XX. (No. 118); XXI. (Nos. 130 and 131); XXII. (Nos. 136-139); “List of Members, &c.” Session 1887-88. *From the Society.*

“The Journal of Conchology.” Vol. V., No. 11 (1888). *From the Conchological Society of Great Britain and Ireland.*

"Bulletin de la Société Zoologique de France pour l'Année 1888." Tome XIII., No. 6. *From the Society.*

"The Quarterly Journal of the Geological Society of London." Vol. XLIV. Part 3 (No. 175), 1888. *From the Society.*

"Victoria—Annual Report of the Secretary for Mines and Water Supply, 1887." *From the Secretary for Mines, Melbourne.*

"Nikolaus von Miklucho-Maclay, Reisen und Wirken." Von Dr. Otto Finsch. *From the Author.*

"Mémoires de la Société des Naturalistes de la Nouvelle-Russie, Odessa." Tome XIII., Part 1 (1888). *From the Society.*

"Zoologischer Anzeiger." XI. Jahrg., Nos. 286-288 (1888), *From the Editor.*

"Bulletin de la Société Royale de Géographie d'Anvers." Tome XII., Fasc. 5; T. XIII., Fasc. 1 (1888). *From the Society.*

"The Proceedings of the Royal Society of Queensland," 1888. Vol. V., Part 2. *From the Society.*

"Transactions and Proceedings of the Royal Society of Victoria." Vol. XXIV., Part 2 (1888). *From the Society.*

"Feuille des Jeunes Naturalistes." No. 215 (Sept., 1888). *From the Editor.*

"The Victorian Naturalist." Vol. V., No. 6 (October, 1888). *From the Field Naturalists' Club of Victoria.*

"Records of the Geological Survey of India." Vol. XXI., Part 3 (1888). *From the Director.*

"The American Naturalist." Vol. XXII., No. 259 (July, 1888). *From the Editors.*

"Prodromus of the Zoology of Victoria." Decade XVI. By Frederick McCoy, C.M.G., M.A., &c. *From the Premier of Victoria, through the Librarian, Public Library, Melbourne.*

"Papers and Proceedings of the Royal Society of Tasmania for 1887." "Abstract of Proceedings, 14th May, 11th June, and 13th August, 1888. *From the Society.*

"A Synopsis of the Queensland Flora." Second Supplement, (1888); "Classified Index of the Second Supplement to the Indigenous and Naturalised Plants of Queensland." By F. M. Bailey, F.L.S., Colonial Botanist. *From the Author.*

"Transactions of the Connecticut Academy of Arts and Sciences." Vol. VII. (1886-88). *From the Academy.*

"The Australasian Journal of Pharmacy." Vol. III., No. 34 (October, 1888). *From the Editor.*

"On the Species of Echinoidea described by Linnæus in his work Museum Ludovicæ Ulricæ;" "On a recent Form of the Echinoconidæ." By Sven Lovén. *From the Hon. W. Macleay, F.L.S., &c.*

"Royal Dublin Society—Scientific Transactions." Series ii., Vol. III. Part xiv., and IV. Part i. (1887-88); "Scientific Proceedings." n.s. Vol. V., Parts 7 and 8; VI., Parts 1 and 2 (1887-88). *From the Society.*

"Annales du Musée d'Histoire Naturelle de Marseille.—Zoologie." Tome I., Parts 1 and 2 (1882-3). *From the Director, Dr. A. F. Marion.*

"Bulletin de la Société Linnéenne de Normandie." 4^e Série, 1^{er} Vol. (1886-87). *From the Society.*

"Annales de la Société Entomologique de France." 6^e Série. Tomes V.-VII. (1885-88). *From the Society.*

"Bulletin de la Société d'Etudes Scientifiques d'Angers." Nouvelle Série—xv^e Année (1885); "Supplément à l'Année 1884." *From the Society.*

"Journal de Conchyliologie." 3^e Série—Tome XXVII. (1887). *From the Director.*

"Verhandlungen des naturhistorischen Vereines der preussischen Rheinlande und Westfalens." 1882 (Erste Hälfte); 1885; und 1886. *From the Society.*

"Mémoires de la Société des Naturalistes de Kiew." Tome IX., Livs. 1 et 2 (1888). *From the Society.*

REVISION OF THE GENUS *HETERONYX*, WITH
DESCRIPTIONS OF NEW SPECIES.

BY THE REV. T. BLACKBURN, B.A., CORR. MEM. LINN. SOC. N.S.W.

PART I.

The monographs of the genera *Diphucephala* and *Liparetrus* by the Hon. W. Macleay, published in the Proceedings of the Linnean Society of N.S.W. in 1886, are probably in the hands of every student of Australian *Lamellicornes* as valuable books of reference. I hoped that Mr. Macleay would continue the work of monographing the *Melolonthidæ* of Australia, and have urged him to do so. But he tells me that he has other entomological work of a more pressing nature at present, and that it is not at all likely he will ever return to the work in question. As he was good enough to offer, if I would take up the task, to facilitate my efforts as far as possible by the loan of types from his collection, I have thought well to enter upon it, and have decided to commence with the genus that is the most formidable in respect of numbers,—viz., *Heteronyx*.

For this work I have at my disposal,—besides my own collection and a large portion of the Macleay collection, those of the Adelaide Public Museum, of the Adelaide University Museum, and of several private collectors, including a very interesting case of specimens obtained some years ago in the Northern Territory by Mr. J. P. Tepper.

It will be necessary to preface my revision of the species of *Heteronyx* by some remarks of a general nature,—first concerning

the limits of the genus,—and then concerning the characters that appear to me most reliable for distinguishing and sub-dividing the numerous species that are attributable to it.

As originally characterized by M. Guérin-Ménéville, the genus was accommodated to the reception of the single species known to that author, but the discovery of additional species soon made it clear that there are many insects evidently congeneric with *H. Australis*, for which a place must be found in *Heteronyx*, by the removal from the category of “generic characters” of some characters that had been so regarded. M. Lacordaire (Gen. Col. III. 231), consequently re-characterized the genus, but in a manner that will not stand as absolutely satisfactory when a large collection of types is examined, for a rigid adherence to his diagnosis of the anterior tibiae would exclude species that (so far at least as my observation goes), present no other distinctive character either structural or superficial, while a similar application of his diagnosis of the claws of the tarsi would admit species differing in other important respects from the typical form.

Among the genera found in Australia then, possessing the characters that would place them (in M. Lacordaire’s system) in the “groupe *Heteronyctides*,”—it appears to me that *Heteronyx* should contain only the species presenting the following characters:—“elytra not abnormally short (as in *Liparetrus*), antennæ of eight or nine joints, claws not simple,” and I have not seen any possessing these characters that I should be disposed to exclude; I regard the last-mentioned of these characters as the most essential one.

The following names are, or have been regarded as, more or less synonymic with *Heteronyx*.

Silopa, Er. (Wieg. Arch. 1842, I. p. 161). This genus was characterized probably on *Heteronyx Australis*, Guér.,—certainly on a true *Heteronyx*,—and is an absolute synonym.

Omaloplia, Steph. This is a non-Australian genus to which an Australian species (of *Caulobius* probably) was erroneously referred by MM. Hombron and Jacquinet.

Philochlænia. The authors just named applied this name to another Australian species (also appertaining probably to *Caulobius*), and it has since been adopted by M. Blanchard for an American genus.

Sericesthis was a name applied by Dr. Boisduval (Voy. de l'Astrolabe),—but without any generic definition,—to insects of several genera, among which I doubt there having been a true *Heteronyx*; and probably M. Lacordaire considered it to include part of *Heteronyx* only through a confusion between that genus and *Caulobius*.

Caulobius, Le Guillou (Rev. Zool. 1844). I have not seen the original diagnosis of this genus, but the insect for which it was proposed is stated by M. Lacordaire to be identical with *Silopa pubescens*, Er., which again M. Lacordaire asserts to have perfectly simple claws; in that case I think it should be excluded from *Heteronyx*. If M. Lacordaire's assertion regarding *S. pubescens*, Er., is correct, it is clear that Erichsen attributed his *pubescens* to *Silopa* (which he characterizes as possessing bifid claws) in error, and then Le Guillou's name must be accepted for it. M. Lacordaire considers *Caulobius* a synonym of *Heteronyx*, while Dr. Burmeister places it not even in the same group of genera. I have several species before me which I believe to be congeneric with *Caulobius villosus*, Le G., and am of opinion that Dr. Burmeister is right. At all events the name *Caulobius* must not be treated as congeneric with *Heteronyx*, as there is no doubt of the simplicity of the claws in the species attributed to it.

Haploopsis, Blanch., is a synonym of *Heteronyx*, according to M. Lacordaire, but it has simple claws, and presents other differences; I regard it as a good genus.

Hostilina is distinguished from *Heteronyx* by M. Blanchard, on the shape of its labium; and the genus is doubtfully accepted by M. Lacordaire. I find the labium so extremely subject to variety in *Heteronyx*, that I have no hesitation in rejecting the name, although I have not seen the original species, which M. Lacordaire characterizes as having all the appearance of a *Heteronyx*.

Eurychelus was established by M. Blanchard as distinct from *Heteronyx* on account of the unusual length of the second joint of the maxillary palpi. I have very ordinary looking species of *Heteronyx* in which this joint is quite as long as it should be in *Eurychelus*, but as the species (*E. marmoratus*, Blanch.), appears to differ in facies from *Heteronyx*, it would not be wise to reject the name without having seen the type.

Nepytis, Er., resembles *Heteronyx* in having the claws not simple, but differs in having 7-jointed antennæ. This latter character I cannot regard as absolutely conclusive of generic distinction, but as it seems to be accompanied by an increased length of elytra, the genus may very probably be a good one.

It will thus be seen that in the group of Australian genera which would fall into the *Heteronyxides* of Lacordaire, I regard *Heteronyx* as distinguished by the structure of its claws from all except *Eurychelus* and *Nepytis*, from the former of which I can specify no certain distinction (though it is probable such distinctions exist), while from the latter it differs in its antennæ consisting of more than seven joints.

To the genus *Heteronyx* thus defined a very large number of Australian species appertain, and it would doubtless tend to simplify the task of their identification and classification if they could be divided into groups in any degree natural by any tangible structural character. But such subdivision, I am of opinion, is impossible, although the structural differences among the species are so great as to make the subdivision into purely artificial groups exceptionally easy. If the attempt be made to form subgenera on the relation of the clypeus to the labrum, or on the number of joints in the antennæ, or on the proportions of the hind coxæ, or the shape of the femora or tibiæ, or on the form of the labium, it will be found that the nearest allies of any given species in one sub-genus are in an entirely different sub-genus. Hence, I think *Heteronyx* should be treated as an assemblage of insects forming altogether a very natural and distinct group, but with little fixity of structure in any individual organ.

As regards the sculpture of the species, the entire absence of geminate striation on the elytra, almost universally present in the allied genera, is very noticeable, and the decided tendency of the prothorax to take the form of being lobed behind is common to all, or nearly all, the species that I have seen.

A few remarks will be necessary on the characters that I rely upon for the distinction of species.

The character best fitted for the formation of primary groups is to be found, I think, in the shape of the labrum and clypeus and the relation of the one to the other. The upper border of the labrum shows, in most species, a tendency to be dilated in an upward direction, but in very varying degrees. In some species this dilatation is very slight, and the labrum is entirely below the level of the upper surface of the clypeus (as in most of the allied genera), but in others it is so strong that the upper surface of the labrum rises to, or above, the level of the upper surface of the clypeus, from the front of which it appears to project upwards, in which case the anterior margin of the clypeus is usually emarginate for its accommodation, and the reflexed margin of the same is interrupted in the middle. I propose then to divide the genus into two main groups, the first containing those species in which the clypeus is free from the labrum, the other those in which the labrum rises to or above the level of the clypeus. Nevertheless, a few species in which the relation of the labrum and clypeus is exceptional,—being either (a) as in the first group but with the labrum exposed by profound emargination of the clypeus, or (b) with the relation evidently connecting the species with the second group, but the labrum not quite sufficiently erected to place it accurately there,—I have thought it most intelligible to isolate as a group of intermediate forms, by which means the two main groups are fairly homogeneous in respect of this particular character.

An inspection of the ventral segments will show that (invariably, as far as I have seen) one or two transverse lines of hairs or bristles is to be found on each of them, which I have called the

"ventral series." These are usually soft hairs, but in a few species they are very strong stout bristles; and as they are in some species confined to the sides of, and in others run all across, the segments, they furnish a valuable key to the distinction of species.

The lateral edges of the prothorax and elytra* are in all cases (so far as I have observed) fringed with a row of bristles or stout hairs, very different from the pilosity that clothes the upper surface in many of the genus. This I call the "lateral fringe." It will be observed in most species to be entirely wanting on the apical margin, but in some it is continued there, and when that is the case it is ordinarily doubled or trebled (*i.e.*, there are two or three rows one behind another), and the individual hairs or bristles are stouter than those on the sides.

The hind femora vary greatly in shape. In some species the outline immediately before the inner apical angle is strongly and angularly produced (forming a kind of tooth), which in other species is enfeebled almost to the degree of total disappearance.

The claws are, in all cases I think, appendiculate rather than bifid in the strict sense, but as there is a considerable variation in the appendiculation and the term "bifid" has been used in many existing descriptions, I shall continue to use this latter term for those claws in which the inner apex of the basal portion (immediately in front of the appendiculation) is produced in a well-defined manner and in a direction more or less at a right angle to the longitudinal outline of the claw; and shall speak of this produced piece as the "lower," and the portion of the claw beyond it as the "upper" lobe.

The other characters referred to in my descriptions do not, I think, require preliminary explanation.

The sexual distinctions are not very noticeable, and do not appear to be readily available for distinguishing species. In the

*On the elytra these fringes are inserted in the epipleural portion, which in this genus is scarcely at all turned under except at the extreme base.

males of those species with appendiculate claws, the basal portion of the anterior claws is usually stouter than in the females, and the hind-body of the females throughout the genus is longitudinally (*i.e.*, as viewed from the side) considerably more convex than that of the males.

The present memoir contains descriptions of all the previously undescribed Australian species known to me, of the first main group (or "section"), of the 2nd (or "intermediate section"), and of that portion of the 3rd in which the antennæ are 8-jointed and the claws bifid. I prefix tabulations to aid the study of the descriptions that follow, and have included in them the names of all the previously described species of which I have types before me.

The following species I have not been able to identify, nor are their descriptions sufficiently detailed to allow of my placing them in the tabulation without actual inspection of specimens. They all belong to the group treated of in this present memoir:—

H. laticeps, Burm. Exact habitat not known; probably it is allied to *H. corpulentus*, Macl., but distinguished by its pale colour and by the truncate apex of the elytra,—the outer extremity of truncation being sharply angled.

H. planatus, Burm., from S. Australia. It is said to be remarkable (as its name implies) for its flattened form.

H. præcox, Er., from Tasmania. Probably near my *H. æqualis* but distinguished *inter alia* by the prothorax being feebly channelled.

H. tempestivus, Er., from Tasmania. Probably near my *H. testaceus*, but with the clypeus evenly rounded in front.

H. pilosellus, Blanch., from N.S.W. Not sufficiently characterized, no definite distinction from *H. piceus*, Blanch., being pointed out.

H. piceo-niger, Macl., from N.W. Australia would probably come near *corpulentus* in my tabulation.

The following of Mr. Macleay's species I cannot be sure belong to this group, though in all probability it is their place; I do not know the number of joints in their antennæ. They appear to be distinct from all the species known to me:—

H. pallidulus and *ruficollis*, from Gayndah, and *H. parvulus* and *transversicollis* from N. W. Australia.

H. pubescens, Er., is not a true *Heteronyx*.

I do not know of any other described species that are likely to be members of this group. I purpose, when I have completed my revision of the genus, adding in an appendix copies of the descriptions of such of the species I have then failed to identify as have not already appeared in the Transactions of N. S. Wales Societies.

1ST SECTION.—CLYPEUS FREE FROM LABRUM; ITS REFLEXED
ANTERIOR MARGIN ENTIRE.

- A. Antennæ consisting of only 8 joints
- B. Ventral series consisting of stout
bristles (claws appendiculate)
- C. Surface furnished with conspicuous
granules, each granule bearing a very long coarse seta..... *insignis*, Blackb.
- CC. Surface not clothed as "C"
- D. Prothorax rugosely and very
closely punctured..... *torvus*, Blackb.
- DD. Prothorax not as "D."
- E. Clypeal suture impressed
- F. Lateral fringes of elytra
strongly continued round
apex *tristis*, Blackb.
- FF. Lateral fringes not continued round apex..... **frontalis*, Blackb.

*The bristles in the ventral series are less stout than in the other species of this section, and render the place of this insect in the tabulation doubtful.

- EE. Clypeal suture not impressed *fortis*, Blackb.
- BB. Ventral series consisting of fine hairs
- C. Surface of clypeus continuous with that of the rest of head ; clypeal suture obsolete.....
- D. Clypeus scarcely emarginate in front *fulvohirtus*, Blackb.
- DD. Clypeus strongly emarginate in front (claws strongly bifid) *badius*, MacI.
- CC. Surface of clypeus on a different plane from that of the rest of head ; clypeal suture well-defined
- D. Hind corners of prothorax explanate ; upper tooth of anterior tibiæ almost obsolete (claws strongly bifid).... *rufopiceus*, MacI.
- DD. Hind corners of prothorax not explanate
- E. Anterior tibiæ bidentate..... *brevicollis*, Blackb.
- EE. Anterior tibiæ tridentate...
- F. Hind angles of prothorax sharp and pointed backwards *Tepperi*, Blackb.
- FF. Hind angles of prothorax rounded off..... *spretus*, Blackb.
- AA. Antennæ consisting of 9 joints
- B. Prothorax moderately (or not so strongly as in "BB") lobed behind
- C. Claws—at any rate the anterior—appendiculate (the appendiculate portion more than half as long as the basal).....
- D. Lateral fringe of elytra not continued round the apex.....

- E. Clypeus not emarginate.....
- F. Sculpture of upper surface close, fine, and uniform *piceus*, Blanch.
- FF. Sculpture of upper surface coarse and sparse *Froggatti*, MacI.
- EE. Clypeus emarginate..... *occidentalis*, Blackb.
- DD. Lateral fringes of elytra continued and increased round the apex *horridus*, Blackb.
- CC. Claws bifid ; or, if appendiculate, the appendiculate portion short
- D. Lateral fringe of elytra (as distinguished from general pilosity of surface) not continuous round apex.....
- E. Hind coxæ considerably shorter than metasternum on external margin.....
- F. Claws at most *moderately* bifid
- G. Clypeus distinctly emarginate in front.....
- H. Surface very coarsely punctulate
- K. Pygidium normal.....
- L. Hind coxæ very little shorter than metasternum *solidus*, Blackb.
- LL. Hind coxæ much shorter than metasternum.....
- M. Prothorax much more than half again as wide as long..... *Beltanae*, Blackb.
- MM. Prothorax scarcely more than half again as wide as long *satelles*, Blackb.

- KK. Pygidium strongly carinate *Darlingensis*, Blackb.
- HH. Surface very finely punctulate *testaceus*, Blackb.
- GG. Clypeus not emarginate in front.....
- H. Prothorax closely punctulate *gracilipes*, Blackb.
- HH. Prothorax very sparingly punctulate..... *victoris*, Blackb.
- FF. Claws very strongly bifid, upper lobe scarcely longer than lower ...
- G. Surface of elytra normal..... *breviceps*, Blackb.
- GG. Surface of elytra with long hairs rising from slight elevations.....
- H. Free outline of clypeus forming a regular curve..... *rugosipennis*, MacI.
- HH. Free outline of clypeus flattened and sinuous in front..... *corpulentus*, MacI.
- EE. Hind coxæ scarcely if at all shorter than metasternum on external margin....
- F. Front and hind margins of hind coxæ strongly converging inward
- FF. Front and hind margins of hind coxæ but little convergent inward
- DD. Lateral fringe of elytra continued and increased round apex
- BB. Prothorax so lobed as to be about half as long behind, as in front of, a line joining the hind angles ... *lobatus*, Blackb.

H. INSIGNIS, sp.nov.

Sat elongatus ; postice leviter dilatatus ; minus nitidus ; ferrugineus, albido-pruinosis ; crebre subtiliter punctulatus ; pilis brevibus adpressis vestitus ; prothorace elytris et abdominis segmentis 2-5 (his ad latera transversim lineatim positis) granulatis, granulis setis longis rufis instructis. [Long. 6, lat. 3 lines (vix).

The pruinosity in some lights make the surface appear of a bluish-white colour. The puncturation of the upper surface is almost uniform, being slightly at its coarsest on the clypeus, and at its finest on the prothorax. The clypeus has a well-defined even reflexed margin, and is nearly evenly rounded in front, very slightly truncate ; it forms an even surface with the rest of the head and its suture is feebly marked and slightly arched. The prothorax is slightly more than half again as wide as it is long down the middle ; it is widest close to the base, which is about half again as wide as the front margin ; the front is strongly emarginate, the anterior angles being acute ; the sides are divergent in a slight curve from the front almost to the base, where they form a roundly obtuse angle with the basal margin which is rather strongly lobed hindward in the middle. The elytra have no fringe at the apex, and are about three times as long (and at their widest part nearly half again as wide) as the prothorax. They and the prothorax are irregularly studded with large punctures, the front edge of which is raised in a granuliform manner and from which a very long, coarse, red seta protrudes (the longest of these setæ are more than half the length of the prothorax). On the under-side there is a transverse line on the middle (longitudinally) of ventral segments 2-5 formed of strong bristles rising from granules, the bristles being more than half as long as the segment and very stout ; these rows of bristles commence at the lateral margin and run out to near the middle of the segment, but entirely fail on the central portion. The hind coxæ are very little shorter than the metasternum on its external margin, and almost entirely overlap the basal ventral segment. Hind femora much wider than the

intermediate, and wider than any segment of the hind body ; about six long bristles on inner basal edge of hind tibia ; basal part of external margin of hind femur with a fringe of strong cilia, their inner apex very little produced but distinctly angulated. The epipleural portion of the elytra is unusually wide, and not at all turned under except at the extreme base.

Port Lincoln ; I have seen only a single specimen.

H. TRISTIS, sp.nov.

Sat elongatus, postice leviter dilatatus ; sat nitidus ; niger, antennis palpis pedibusque plus minus rufis ; pilis brevibus adpressis vestitus ; capite confertim rugulose, prothorace fortius nec crebre, elytris squamose crebrius, pygidio sparsim, punctulatis ; subtus fortius nec crebre punctulatus ; abdominis segmentis ut præcedentis setiferis. [Long. 6, lat. 3 lines.

The head and prothorax scarcely differ in shape and proportions from those of *H. insignis*, except that the clypeal suture is quite straight ; the elytra are a little less dilated behind. The upper surface is devoid of erect hairs or setæ except the pygidium (which is clothed with fine long reddish hairs), and the lateral and apical margins of the elytra which are fringed with coarse red bristles springing from minute granules ; the bristles in the fringes are much closer, but the row is not doubled round the apex. The puncturation on the underside becomes very faint down the middle of the ventral segments. The hind coxæ are shorter than the metasternum and scarcely overlap the basal ventral segment. The hind femora are wider than the intermediate, but scarcely wider than the segments of the hind body ; there are a few reddish bristles on the inner basal edge of the hind tibiæ and a fringe of short hairs reaching from the base to beyond the middle of the external margin of the hind femora. The middle line of the pygidium is feebly sulcate in its apical half. The inner apical margin of the hind femora is moderately produced, its outline rounded rather than angulated.

Occurs in the Adelaide district.

H. FORTIS, sp.nov.

Minus elongatus; robustus; postice leviter dilatatus; minus nitidus; niger vel ferrugineus, antennis palpisque testaceis, pedibus plus minus piceis vel rufescentibus; capite crebre rugulose, prothorace leviter minus crebre, elytris rugulose sat fortiter, pygidio vix perspicue, punctulatis; clypeo antice leviter rotundato, margine reflexo medio gracili; prothorace fortiter transverso.

[Long. $4\frac{2}{3}$, lat. $2\frac{2}{3}$ lines.

The clypeus is wide and short, not forming an even surface with the rest of the head, the somewhat angulated clypeal suture appearing to be obscurely elevated, the appearance being caused, however, almost entirely by the clypeus being on a plane slightly lower than that of the rest of the head; the front margin is strongly reflexed on the sides, but much feebler towards the middle. The prothorax is nearly twice as wide as its length down the middle, the base not quite half again as wide as the front, which is very gently and widely emarginate, with angles but little produced; the sides diverge strongly from the front to near the middle, and thence less strongly to the base (which is widely and rather strongly lobed in the middle), with which they appear (viewed from above) to form right or almost acute angles; but the true margin (viewed from the side) is seen to join the base in a curve. The puncturation is not fine nor close, but has a shallow, effaced appearance, and there is a fairly well marked dorsal channel. The transverse wrinkling of the elytra is quite distinct; each of these bears about nine scarcely traceable striæ, among which are several costæ feebly defined, rather wide, but very little elevated (in some examples quite obsolete); the presence of these gives at a first glance an impression of the elytra being obscurely geminate-striate, but on careful inspection it is seen that the costæ are not bordered by seriate punctures, and that the puncturation and wrinkling of the general surface is not interrupted by them. The lateral fringe is not continued round the apex of the elytra, which has a very narrow membranous border. The pygidium is carinate in its basal half, and

is punctured somewhat similarly to the prothorax. The underside is strongly punctured, moderately closely on the metasternum, very sparingly on the hind coxæ, and extremely closely on the ventral segments, in the middle of which the rows of bristles are obsolete and the puncturation less close. The hind coxæ are very little shorter than the metasternum, and the hind femora very little wider than the intermediate, their inner apical portion angulated and strongly produced.

An extremely aberrant species, with its nearest allies in the next of my "sections." Its *height* (*i.e.*, the distance that a pin run between its elytra would pass through its body) is greater than that of any other *Heteronyx* known to me. The elytra, too, are short, and the longitudinal ridges are quite exceptional.

Port Lincoln; also taken by Professor Tate at Fowler's Bay.

N.B.—I have seen some specimens from the eastern and south-eastern parts of S. Australia which are decidedly smaller ($3\frac{2}{5}$ lines) than my types of this insect, but do not appear to differ otherwise.

H. TORVUS, sp.nov.

Sat elongatus, postice leviter dilatatus; minus nitidus; niger, antennis palpisque rufis; pilis brevibus adpressis sparsim obscure vestitus; capite prothoraceque creberrime rugulose, pygidio subtilius sparsius leviter, elytris squamose minus crebre, punctulatis; his rugulose transversim rugatis, membrana rufa marginatis; subtus nitidior, fortius nec crebre punctulatis; abdominis segmentis ut præcedentis setiferis. [Long. 5-6, lat. $2\frac{1}{3}$ lines.

Clypeus evenly but not strongly margined, and gently rounded in front (more strongly margined and less strongly rounded in the female than in the male), its surface continuing the plane of the forehead, and the clypeal suture scarcely traceable. The prothorax is nearly twice as wide as down the middle it is long, its base about half again as wide as its front margin which is moderately emarginate, with sharp angles; its sides diverge in a gentle curve from the front to the base; the basal angles are roundly obtuse,

the base bisinuate, the lobe in the middle moderately strong. The head and prothorax are very closely, rugosely, and evenly punctured. The puncturation of the elytra resembles that of the prothorax, but is considerably less close and is modified by a system of rather coarse wavy transverse wrinkles; there are faint indications of about nine striæ, between some of which the interstices are not quite flat. There are no setæ or hairs on the upper surface, except the lateral fringe which is not continued to the apex of the elytra. The metasternum, hind coxæ and hind body are scarcely different from the same parts in *H. fortis*. The hind femora are markedly wider than the intermediate and have the inner apical angle or tooth very well developed, and their external edge strongly fringed almost to the apex; the hind tibiæ are fringed with strong bristles on their inner side, several being placed close together at the base.

Adelaide district; also near Sedan.

H. FRONTALIS, sp. nov.

Lator; postice leviter dilatatus; sat nitidus; ferrugineus; clypeo confertim rugulose, capite postice subtilius minus crebre, prothorace fortius minus crebre, elytris fortiter minus crebre, pygidio sparsius subtilius, punctulatis; elytris post medium membrana testacea marginatis; abdomine ut *H. insignis* setifero.

[Long. $5\frac{1}{4}$, lat. $2\frac{3}{4}$ lines.

The clypeus is exceptionally short and wide (being nearly four times as wide as long); it is evenly margined, and widely rounded in front; it does not form with the rest of the head a continuous plain surface; the clypeal suture is distinctly impressed and almost straight. The prothorax is a little more than half again as wide as its length down the middle and about half again as wide at the base as across the front, which is rather strongly emarginate with sharp angles; its sides diverge in a gentle curve from the apex to the base; viewed from above they seem to form with its base on either side a sharp right angle, but if the margin be viewed accurately from the side it is seen to curve into the base without

any angle at all. The puncturation of the clypeus is fine, close, and rugose, that of the rest of the head smooth and a little less close and less fine; the puncturation of the prothorax is still stronger and less close (but still neither sparse nor coarse), that of the elytra about as close as on the prothorax and decidedly coarser. The elytra are very little wrinkled transversely, and (except a faint trace behind of a sutural stria) have no trace of striae. The pygidium is channelled longitudinally in its apical half. The underside and legs closely resemble those of *H. torvus*, but differ in the puncturation of the hind body being more enfeebled down the middle portion, and the hind femora being almost impunctate on the inner portion of their surface, and having the inner apical angle much less defined. The ventral series consist of stout hairs rather than bristles.

Northern Territory of S. Australia.

H. FULVO-HIRTUS, sp. nov.

Sat elongatus, postice vix dilatatus; sat nitidus; brunneus, antennis palpisque testaceis; pilis fulvis brevibus (retrosum directis) sat dense vestitus, elytris etiam capillis sat longioribus erectis (haud retrosum directis) sparsius instructis; capite orebre rugulose, prothorace sparsius crassissime, elytris crasse squamose, pygidio sparsius sat fortiter, punctulatis; elytris membrana fulva anguste marginatis; abdominis segmentis 2-5 ad latera capillis (erectis gracilibus sublineatim transversim positis) instructis.

[Long. 4.5, lat. 2-2½ lines.

The clypeus is widely and gently emarginate in front, with its reflexed margin (though continuous) much attenuated above the labrum; it forms a continuous surface with the rest of the head, and the clypeal suture is barely traceable; the puncturation is close, rough, and fine in the front of the clypeus, becoming gradually less so hindward to the back of the head. The prothorax is nearly twice as wide as its length down the middle, and at the base rather more than half again as wide as across the front, which is very deeply emarginate with sharp strongly produced

angles ; its sides diverge in a gentle curve to about the middle, and thence are nearly straight to the base ; the basal angles are roundly obtuse, the base rather decidedly and narrowly lobed in the middle, but scarcely sinuate on either side of the lobe ; the surface is sparingly sprinkled with very large coarse punctures, and bears a fringe of long erect hairs in front. The puncturation of the elytra is almost as coarse and sparse as that of the prothorax, but has a squamose appearance, and is much run together transversely by vague coarse wrinkles ; there is no indication whatever of striæ (in the example before me). The pygidium has faint traces of a keel in front, and has an obscure longitudinal fovea in front of the apex. The puncturation of the metasternum, hind coxæ, and hind body is almost as in *H. torvus*, except that the last-named part is nearly lævigata in the middle. The hind coxæ are considerably shorter than the metasternum, and scarcely overlap the basal ventral segment. The hind femora are considerably wider than the intermediate, with their inner apical angle strongly produced in a tooth, and their external edge clothed with long soft hairs nearly to its apex ; the hind tibiæ have fine bristles or hairs on their inner side, several being crowded together close to the base. Claws bifid.

Taken near Sedan by Mr. Rothe.

H. BREVICOLLIS, sp.nov.

Minus elongatus, postice leviter dilatatus ; sat nitidus ; ferrugineus ; capite prothoraceque sat æqualiter crasse minus crebre, elytris fortius subseriatim nec crebre, pygidio crasse crebrius, punctulatis ; clypeo antice subtruncato, margine reflexo medio angulatim elevato ; prothorace fortiter transverso.

[Long. 3, lat. $1\frac{3}{4}$ lines.

The clypeus is unusually elongate, the distance from its front to the clypeal suture (which is well-impressed and angulate) being scarcely less than from the latter to the back of the head ; it is sub-truncate in front, with a strong reflexed margin which becomes wider in the middle in such fashion that its dilatation appears as a

feeble erect tooth ; it does not form with the rest of the head a continuous plane. The prothorax is fully twice as wide as it is long down the middle, the base about a third again as wide as the front, which is evidently bisinuate with its angles very little produced ; the sides are gently rounded, the hind angles obtuse (somewhat roundly), the base bisinuate, and hardly lobed in the middle. The transverse wrinkling of the elytra is almost non-existent ; these have no distinct striation and their lateral fringe is not continued round the apex (the specimen before me, however, is evidently abraded), there is a fairly well-defined apical membranous border. The pygidium in a fresh specimen is probably clothed with rather long erect hairs. The underside is nitid, strongly and rather closely punctured, the puncturation as also the rows of hairs obsolete in the middle of the ventral segments. The hind coxæ are very much shorter than the metasternum, the hind femora much wider than the intermediate, with their inner apical portion scarcely prominent. Claws appendiculate.

N. S. Wales ; in the collection of the Hon. W. Macleay.

H. TEPPERI, sp.nov.

Sat elongatus, postice vix dilatatus ; sat nitidus ; niger, antennis palpisque rufis ; capite crebre rugulose, prothorace sparsius sat fortiter, elytris fortiter subsquamose, punctulatis ; his apicem versus membrana testacea marginatis ; pygidio opaco sparsim granulato ; abdomine ut *H. fulvo-hirti* hirsuto.

[Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ lines.

The clypeus is evenly margined and strongly rounded in front, and forms a continuous surface with the rest of the head, interrupted however by the slightly arched and strongly keeled clypeal suture ; the head is punctured as that of *H. fulvo-hirtus*. The prothorax is quite twice as wide as its length down the middle, and at the base rather more than half again as wide as across the front which is moderately emarginate with sharp angles ; its sides diverge in a gentle curve to about the middle and thence are nearly straight to the base with which they form on either side a right

angle whose extreme apex is scarcely rounded off and which is a little directed backward; the base is bisinuate with the middle lobe very wide but rather strongly produced backward; the surface is rather sparingly and strongly punctured, but the punctures are not large. The punctures on the elytra are much larger and closer than those of the prothorax and are not much run together by transverse wrinkles; there is a rather distinct sutural stria, and several more are faintly indicated. The underside and legs scarcely differ from those of *H. fulvo-hirtus*, except in the puncturation of the middle part of the hind body being less sparse. The upper surface is almost devoid of pubescence in the example before me, but probably in a perfectly fresh specimen each puncture bears a very short adpressed seta. Claws bifid.

A single specimen in the S. Australian Museum; exact habitat not known.

H. SPRETUS, sp. nov.

Sat elongatus; postice vix dilatatus; sat nitidus; ferrugineus; capite antice crebre rugulose postice sat sparsim, prothorace sparsius minus fortiter, elytris crasse nec profunde nec crebre, pygidio subtilius sat crebre, punctulatis; elytris postice membrana angusta marginatis; abdomine ut *H. fulvo-hirti* hirsuto.

[Long. 4, lat. 2 lines.

Very like *H. Tepperi*, differing in colour and size, and in the following particulars:—the clypeus is much less strongly rounded in front being almost subtruncate; the keel forming the clypeal suture is strongly angulated in the middle; the clypeus is on a plane slightly below the surface of the rest of the head, which is less closely punctured; the puncturation of the prothorax is a little less strong, and its hind angles are rounded off (as in *H. fulvo-hirtus*); the pygidium is like that of *H. fulvo-hirtus* (but somewhat narrower), and the ventral segments are almost impunctate in the middle. Claws appendiculate.

Sedan; taken by Mr. Rothe.

H. PICEUS, Blanch.

H. piceus, Blanch., Cat. Coll. Ent., 1850, p. 110.

Lator, postice leviter dilatatus; minus nitidus; ferrugineus vel brunneus, antennis palpisque testaceis; pilis brevibus adpressis sat dense vestitus; supra crebre subtilius sat æqualiter (pygidio minus crebre excepto) punctulatus; elytris ad apicem membrana angusta marginatis; abdominis segmentis 2-5 ad latera capillis erectis (lineatim transversim positis) instructis.

[Long. $5.6\frac{1}{2}$, lat. $2\frac{3}{8}$ - $3\frac{3}{8}$ lines.

The head scarcely differs from that of *H. frontalis*, except in having the puncturation closer behind, and the clypeal suture slightly angular in the middle. The prothorax is nearly twice as wide as its length down the middle, and its base is nearly twice as wide as its front, which is deeply emarginate with sharp angles; its sides are very gently rounded, and form a roundly obtuse angle on either side with the base, which is feebly bisinuate, the middle lobe very wide and inconspicuous. The elytra have scarcely any indication of transverse wrinkling but have more or less faint indication (most evident in the female, hardly discernible in the male) of striation. The puncturation of the upper surface is very fine and close (though decidedly less so than in *H. insignis*), and is very evenly distributed, except that it is at its closest on the clypeus, and is much more sparing on the pygidium than elsewhere. Apart from colour the underside and legs scarcely differ from those of *H. torvus*, except in having hairs rather than bristles forming the lateral series of the hind body, and the inner apical angle of the hind femora obsolete. The lateral fringe of the elytra is not continued on the apical portion.

I have very little doubt of the correctness of my identification; M. Blanchard's descriptions of *H. piceus* and *pilosellus* do not specify any definite distinction between the two, but probably (judging by its name) *pilosellus* is furnished with longer and more conspicuous pilosity.

The insect is probably more widely distributed than most of its congeners; I have specimens before me from S. Australia and N. S. Wales.

H. HORRIDUS, sp.nov.

Lator, postice vix dilatatus; minus nitidus; piceo-niger, obscure pubescens; supra crebre subtilius sat æqualiter (pygidio crassius sparsim excepto) punctulatus; elytris apice setis crassissimis dense instructis; abdominis segmentis 2-5 ad latera capillis erectis (lineatim transversim positis) instructis. [Long. 5, lat. $2\frac{3}{8}$ lines.

This insect is very close to *H. piceus*, from which it scarcely differs except in the following respects:—the clypeus is a little longer and consequently more strongly rounded in front with the middle of its anterior margin very slightly sinuate in an upward direction; there is a little more indication of transverse wrinkling on the elytra, and the bristles in their lateral fringe are much coarser and instead of ceasing where the lateral margin turns inward towards the apex they become closer and coarser, forming a dense fringe two or three deep pointed backwards along the apex; on the underside the puncturation of the ventral segments is evidently fainter, more sparse in the middle. The example before me is less decidedly pubescent, but may possibly be abraded.

Also resembles *H. tristis*, differing in its smaller size, in the nature of the ventral series, in the anteriorly much more strongly rounded clypeus, &c., &c.

H. SOLIDUS, sp.nov.

Minus elongatus; postice leviter dilatatus; nitidus; rufo-ferrugineus, antennis palpisque testaceis; clypeo profunde sat crebre, vertice sparsius, prothorace duplo (subtiliter et crassissime) sparsim, elytris crasse squamose, pygidio sparsim minus fortiter, punctulatis. [Long. 5, lat. $2\frac{4}{5}$ lines (vix).

The clypeus is evenly margined and scarcely emarginate in front; the clypeal suture is strongly impressed and somewhat bisinuate, the plane of the suture not continuous with that of the

rest of the head. The prothorax is less than half again as wide as its length down the middle, the base about twice as wide as the front, which is strongly emarginate with sharp angles; the sides diverge somewhat arcuately from the front to the base, with which they seem, viewed from above, to form nearly right angles (the true marginal angles being seen from the side to be rounded off); the base is scarcely bisinuate, and is widely and moderately produced backward in the middle. The transverse wrinkling of the elytra is strong and coarse, their lateral fringe not continued round the apex, which has a scarcely defined membranous border. On the underside the puncturation is strong and close on the metasternum and hind coxæ, not close (especially in the middle) but rather strong on the ventral segments, the hairs in the ventral rows rather fine and more or less continuous all across. The hind coxæ are not much shorter than the metasternum, the hind femora are decidedly wider than the intermediate, with their inner apex rounded and only very widely and feebly prominent. The specimen before me is evidently abraded, but its upper surface bears a few long hairs, which are probably much more numerous in a fresh specimen.

S. Australia; in the collection of the Hon. W. Macleay.

H. BELTANÆ, sp. nov.

Minus elongatus; postice haud dilatatus; sat nitidus; ferrugineus; pilis suberectis fulvis vestitus; supra (clypeo crebrius ruguloso excepto) crasse sat sparsim punctulatus; elytris sat fortiter transversim rugatis; abdominis segmentis capillis erectis longis vestitis. [Long. $3\frac{1}{5}$, lat. $1\frac{1}{5}$ lines.

The clypeus is evenly margined in front, with its anterior border gently and roundly emarginate, its surface continuous with the rest of the head; the clypeal suture very fine and obscure. The prothorax is almost twice as wide as long down the middle, and the base is about half again as wide as the front, which is slightly emarginate, with angles very little produced;

the sides are rather strongly rounded; the hind angles viewed from above appear almost rounded off; the base is almost evenly rounded from angle to angle, so that there is little indication of a basal lobe. The elytra bear (in addition to the transverse rugæ) a number of obscure longitudinal wrinkles (especially one near the suture), which give them a slight appearance in some lights of being striate; they are punctured only a little more closely than the prothorax, but the presence of the numerous wrinkles makes their whole sculpture look *considerably* closer. The metasternum and hind coxæ are sparingly (especially near the middle) and strongly punctured, the latter considerably shorter than the former, and having their hind external angle very much rounded off. The ventral segments are punctured rather sparingly and strongly at the sides—more obscurely in the middle; the ventral series consist of very fine soft hairs, and are much confused with other hairs and hardly conspicuous. The hind femora are moderately wider than the intermediate, their inner apical angle well defined, their under surface (*i.e.*, that which is visible when the insect is laid on its back) impunctate or nearly so (the usual rows of punctures of course are present).

I have met with a few specimens near Beltana, in the interior of S. Australia.

H. BREVICEPS, sp.nov.

Minus elongatus; postice leviter dilatatus; sat nitidus; nigropiceus, antennarum clava pallida; clypeo confertim rugulose, vertice sparsius, prothorace valde sparsim, subtilius punctulatis; elytris pygidioque fortiter nec crebre punctulatis.

[Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ lines.

The specimen before me being a very old one it is likely that the colours of a fresh example might be brighter. The head is very short and wide, the clypeus evenly margined and slightly emarginate in an upward direction in front; the clypeal suture is strongly impressed and angular, the plane of the clypeus not quite continuous with that of the rest of the head, the surface of the same closely, rugosely and rather finely punctured, that behind the

suture being more sparsely punctured and not rugose. The prothorax is rather more than half again as wide as its length down the middle, the base about half again as wide as the front, which is very widely and somewhat deeply emarginate with sharp angles; the sides diverge arcuately in front and are nearly straight behind, appearing from above to form nearly right angles (the true marginal angles being seen from the side to be quite rounded off) with the base, which is scarcely bisinuate, and is widely and moderately produced backward in the middle; the surface is very sparsely and quite finely punctulate. The transverse wrinkling of the elytra is very slight and obscure, their puncturation decidedly strong, not close, and scarcely at all squamose; their lateral fringe is not continued round the apex which has an obscure and very narrow membranous border. The pygidium is extremely nitid, and has a shallow depression near its apex. The underside is very strongly and not closely punctured, the hairs in the ventral rows rather stout, and more or less continuous across the middle, the hind coxæ much shorter than the metasternum, and the hind femora not much wider than the intermediate, with their inner apex rounded and not prominent.

N. Territory of S. Australia; taken by Prof. Tate.

H. RUGOSIPENNIS, MacL.

Through the courtesy of F. M. Bailey, Esq., F.L.S. (Colonial Botanist of Queensland), I have before me specimens taken near Brisbane, which appear without doubt to appertain to this species. From its place in the foregoing tabulation various particulars regarding it are indicated which Mr. Macleay did not mention in his original description (Trans. Ent. Soc. N.S.W. II, p. 196).

H. ÆQUALIS, sp.nov.

Sat elongatus, postice leviter dilatatus; sat nitidus; testaceo ferrugineus; supra pilis suberectis sat brevibus sat dense vestitus; capite crasse squamose minus confertim, prothorace subtilius sparsius, elytris crebrius fortius (nec etiam fortiter), pygidio

sparsim subtilius, punctulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. 4 (vix), lat. 2 lines (vix).

The head scarcely differs from that of *H. horridus*, except in its puncturation being coarse and less close, and is rather lightly impressed, with a squamose appearance. The prothorax is three-quarters again as wide as its length down the middle, and its base is about a third again as wide as its front margin, which is slightly bisinuate, with anterior angles only moderately advanced; its sides are moderately strongly rounded, and their junction with the base is quite rounded off, the latter being bisinuate, with its middle part scarcely produced backward like a lobe. The elytra are transversely wrinkled, and bear distinct indications of striation. On the underside the metasternum and hind coxæ are coarsely punctured (rather closely at the sides, sparingly in the middle); the hind body is much more finely and feebly punctured (but without the puncturation being much enfeebled in the middle); the ventral segments are furnished with transverse lines of fine hairs which are not obsolete in the middle. The hind coxæ are not very much shorter than the metasternum, the hind femora not much wider than the intermediate, and with the inner apical angle scarcely prominent.

Western Victoria; also near Adelaide.

H. VICTORIS, sp. nov.

Sat elongatus, postice vix dilatatus; sat nitidus; nigro-piceus, supra pilis brevibus minus dense vestitus; capite crasse dense rugulose, prothorace crasse sparsius, elytris densius sat fortiter, pygidio sparsius leviter, punctulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. 4, lat. 2 lines.

The clypeus is gently rounded in front and evenly margined, its surface not forming a continuous plane with the rest of the head, the clypeal suture distinctly impressed and lightly arched, the puncturation of the whole head very even, close, coarse and rugose. The prothorax is rather more than a third again as wide

as long down the middle and its base is nearly twice as wide as its front margin which is gently emarginate with front angles but little advanced; its sides diverge from the apex in nearly straight lines to the middle and then are gently arched to the base with which they form an obtuse angle on either side; the base is strongly lobed backward in the middle. The transverse wrinkling of the elytra is well-marked and there is no trace of striæ. The underside and legs closely resemble those of *H. æqualis*, but the inner apical angle of the hind femora is gently and obtusely prominent.

Victor Harbour.

H. GRACILIPES, sp. nov.

Sat elongatus; postice leviter dilatatus; sat nitidus; nigropiceus, antennis palisque testaceis, tarsis rufescentibus; pilis brevibus adpressis albidis vestitus; supra fortius sat crebre punctulatus; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis. [Long. 4-5, lat. 2-2½ lines.

The puncturation of the whole upper surface from the apex of the clypeus to that of the elytra is quite uniform, moderately fine and close but not deeply impressed; the clypeus is evenly margined and rounded in front, its surface not quite in a continuous plane with that of the rest of the head, the clypeal suture moderately impressed and arched. The prothorax is two-thirds again as wide as long down the middle, and the base is about two-thirds again as wide as the front which is strongly emarginate with sharp prominent angles; the sides diverge to behind the middle in nearly straight lines, and thence are arched to the base with which viewed from above they seem to form a defined obtuse angle, but viewed from the side the true margin is seen to be quite rounded off with the base which is only lightly bisinuate though the middle is rather strongly produced backward in a lobe. The transverse wrinkling of the elytra is not very conspicuous; these have no (or almost no) trace of striæ; there is a very fine membranous border behind, and the lateral fringe is not continued round the apex. The pygidium is sparingly and very faintly punctured and is clothed

with long fine erect hairs. The metasternum in the middle is shining and coarsely punctured, at the sides less shining and more finely and closely punctured. The hind coxæ, and the ventral segments are punctured almost as the metasternum; the rows of hairs on the ventral segments are feeble but continuous all across. The hind coxæ are shorter than the metasternum, the hind femora very little wider than the intermediate, their inner apical angle obtuse and little prominent,—the hind tibiæ more slender than is usual in the genus.

S. Australia.

N.B.—A specimen from Kangaroo Island is of a more ferruginous tone than those from the neighbourhood of Adelaide, but does not differ otherwise.

H. SATELLES, sp.nov.

Sat elongatus; postice vix dilatatus; sat nitidus; nigro-piceus, antennis palpisque testaceis, clypeo prothoraceque ad latera, et pedibus, rufescentibus; pilis minus brevibus adpressis albidis vestitus; capite crebre rugulose, prothorace pygidioque sparsius profunde, elytris sparsius minus profunde (sat crasse tamen), punctulatis; clypeo emarginato, in medio tenuius marginato.

[Long. 3, lat. $1\frac{1}{2}$ lines.

The clypeus is broadly and gently emarginate in front (shaped to the labrum), and its reflexed margin is enfeebled in the middle (approximating this species to those of Section III); nevertheless the apex of the labrum does not rise to the level of the plane of the clypeus, and the reflexed margin of the clypeus is not *interrupted*. The surface of the whole head is very nearly a continuous plane and the slightly arched clypeal suture is very obscure. The prothorax is about half again as wide as its length down the middle, and the base is nearly half again as wide as the front, which is strongly emarginate, with sharp prominent angles; the sides diverge in a gentle curve almost to the base where they are rounded more strongly, joining the base (which is slightly bisinuate but rather strongly and narrowly produced backward in

the middle) almost with an even curve. The transverse wrinkling of the elytra is not at all conspicuous; these show scarcely any trace of striation, and their lateral fringe is not continued round the apex, which has a very narrow and obscure membranous border. The pygidium is sparsely clothed with long very fine erect hairs. The underside is nitid, sparsely (especially on the middle of the metasternum), and very strongly, punctured. The hairs in the rows on the ventral segments are very fine but long and continued all across. The hind coxæ are much shorter than the metasternum, the hind femora very little wider than the intermediate, their inner apical angle rounded and not prominent. Hind tibiæ slender.

A specimen evidently identical with this species, in the collection of the Hon. W. Macleay, is of a dark ferruginous colour.

This species is allied to the preceding.

S. Australia; also occurs in N. S. Wales.

H. DARLINGENSIS, sp. nov.

Sat elongatus, postice vix dilatatus; sat nitidus; piceo-ferrugineus, antennis palpisque testaceis; pilis brevibus adpressis albidis sparsim vestitus; capite crebre rugulose, prothorace sparsius fortiter, elytris sparsius minus profunde, pygidio (longitudinaliter carinato) crasse sat dense, punctulatis. [Long. 3, lat. $1\frac{1}{2}$ lines.

Closely allied to *H. satelles*, Blackb., the description of which will apply accurately to the present insect except in respect of the following particulars.

The reflexed margin of the clypeus is not stronger at the sides than in the middle; the sides of the prothorax are much more strongly rounded, and the base of the same is evidently more strongly lobed; the pygidium is more coarsely and closely punctured and has a strong keel down its middle, and the inner apical angle of the hind femora is more prominent.

Darling River; in the collection of the Hon. W. Macleay.

H. OCCIDENTALIS, sp. nov.

Minus elongatus; postice leviter dilatatus; minus nitidus; ferrugineus, pilis suberectis sat brevibus vestitus; capite crebre crasse, prothorace minus fortiter minus crebre, elytris fortiter squamose minus crebre, pygidio sparsim minus fortiter, punctulatis; hoc capillis longioribus erectis vestito.

[Long. 5, lat. $2\frac{1}{2}$ lines.

Clypeus strongly emarginate in the middle, its margin enfeebled (but not wanting) in the extreme centre; clypeal suture distinct and sub-angulate, surface of clypeus nearly continuous with that of rest of head. Prothorax two-thirds again as wide as its length down the middle, its width across front equal to its length, its front lightly emarginate, with angles but little produced; its sides diverge arcuately to behind middle and then curve round to base with which they form a decided obtuse angle, the base is gently bisinuate, and but little produced backward in the middle. The transverse wrinkling of the elytra is very slight, their lateral fringe not continued round the apex which has a very narrow membranous border preceded by a transverse depression simulating a wide membranous border. On the underside the metasternum is very sparsely and finely punctured, the hind coxæ much more closely and coarsely, the ventral segments moderately strongly and evenly but not closely; the hairs in the ventral rows are rather fine and are continuous all across. The hind coxæ are very little narrower than the metasternum, and are scarcely narrowed toward the middle line of the body. The hind femora are decidedly wider than the intermediate and have their inner apex evidently prominent though not angulated.

King George's Sound; in the collection of the Hon. W. Macleay

H. TESTACEUS, sp. nov.

Sat elongatus; postice vix dilatatus; sat nitidus; rufo-testaceus, supra pilis brevibus adpressis vestitus; capite prothoraceque sat fortiter minus dense, elytris pygidioque subtilius dense, punc-

tulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis. [Long. $2\frac{1}{4}$ - $3\frac{1}{2}$, lat. $1\frac{1}{8}$ - $1\frac{1}{2}$ lines.

The clypeus is rather strongly emarginate (in an upward direction) in front, giving it the appearance somewhat of its contour being disturbed by the labrum, but on close inspection the labrum is seen to be altogether below it and its margin to be continuous and even; its surface continues the plane of the rest of the head, the clypeal suture being straight and rather distinctly impressed; its puncturation is slightly finer and closer than that of the rest of the head. The prothorax is two-thirds again as wide as its length down the middle and its base is about a third again as wide as its front margin, which is gently emarginate with angles very little produced; the sides are slightly but somewhat evenly rounded, the basal angles rounded off, the base nearly straight. The transverse wrinkling of the elytra is fine but distinct; these have no trace of striæ except a faint indication of that next the suture, and their lateral fringe is not continued to the apex. On the underside the metasternum and hind coxæ are evenly and strongly punctured, the hind body more sparingly and feebly (especially in the middle), where the hairs of the ventral series become very sparse and short. The hind coxæ are decidedly shorter than the metasternum, the hind femora not much wider than the intermediate, their inner apical angle being rounded and very little prominent.

In my collection; exact habitat not known, but probably it is Port Lincoln.

H. VARIEGATUS, sp. nov.

Sat elongatus, postice leviter dilatatus; sat nitidus, fortiter punctulatus; minus breviter pubescens, supra variegatus, capite piceo, prothorace rufo-brunneo, elytris testaceis, antice posticeque infuscatis; subtus antice piceus postice testaceus, antennis (clava picea excepta) palpis pedibusque testaceis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. $2\frac{1}{3}$, lat. $1\frac{1}{8}$ lines.

The clypeus is evenly margined and sub-truncate in front, its surface continuous with the rest of the head, the clypeal suture finely keeled and straight, the whole head very closely, strongly and rugosely punctured. The prothorax is about half again as wide as long down the middle, and its base is about a third again as wide as its front margin, which is slightly bisinuate, with angles but little advanced; its sides are gently arched and form on either side a roundly obtuse angle with the base which is bisinuate, its middle part only moderately produced backward; its surface is extremely coarsely and rugosely (but less closely than that of the head) punctured. The elytra are punctured even more coarsely (but a little less closely) than the prothorax; they are a good deal wrinkled transversely and have scarcely any trace of striation. The pygidium (which is testaceous in colour) is punctured strongly (but much less so than the elytra), and closely. The whole upper surface is rather densely clothed with semi-erect rather short pubescence (the lateral fringe of the elytra being carried strongly round the apex), and has a mottled appearance owing to some infuscation on the elytra round the scutellum and on the hinder part of the disc with some indication of infuscate spots on the prothorax. On the underside there is the same mottled appearance, almost every part (except the metasternum which is wholly piceous) being more or less testaceous clouded with infuscation; the metasternum and hind coxæ are coarsely punctured, the hind body rather coarsely but not deeply, the puncturation and rows of hairs (which are fine and long) being continued all across. The hind coxæ are opaque (in strong contrast to the rest of the surface), and have a whitish pruinose appearance; their hind margin is cut quite obliquely leaving a wide piece of the basal ventral segment visible at the side and almost concealing it towards the middle; the hind coxæ are quite as wide as the metasternum (which is strongly protuberant) on its middle line; the hind femora are considerably wider than the intermediate with their inner apical angle rounded off and scarcely at all prominent.

Western Australia; sent to me by E. Meyrick, Esq.

H. LOBATUS, sp.nov.

Sat elongatus; postice leviter dilatatus; sat nitidus; ferrugineus, antennis palpisque testaceis; pilis brevibus adpressis testaceis vestitus; capite rugulose crebre, prothorace (hoc postice fortiter producto) sat fortiter sat sparsim, elytris fortiter sat crebre, punctulatis. [Long. 4, lat. 2 lines.

The clypeus is evenly margined and slightly truncate in front, its surface not quite forming a continuous even plane with the rest of the head, its puncturation closer and not so coarse as that behind the impressed clypeal suture which is slightly arched and tolerably distinct. The prothorax is three-fifths again as wide as its length down the middle, and its base is nearly three-fifths again as wide as its front, which is widely but not very strongly emarginate with sharp moderately produced angles; its sides diverge with very slight curvature to the base with which they form a rounded angle; the base is scarcely bisinuate but extremely strongly produced backward in a middle lobe. The transverse wrinkling of the elytra is well-marked and there is no trace whatever of striation; the lateral fringe is not carried round the apex, and there is little indication of a membranous apical border. The pygidium is not punctulate but granulate, each granule bearing a fine erect hair. The underside (especially the metasternum) is strongly and rather closely punctured on the sides, more feebly and sparsely in the middle. The hairs in the rows on the ventral segments are long and fine and continue strongly across the middle. The hind coxæ are decidedly shorter than the metasternum, the hind femora moderately wider than the intermediate, their inner apex rounded and scarcely prominent. Claws dentate near apex.

Port Lincoln.

2ND SECTION.—(INTERMEDIATE).

- A. Antennæ 9-jointed. Clypeus deeply and triangularly excised in the middle, in consequence of which the labrum is much exposed.....

- B. Upper surface clothed with adpressed hairs, or scarcely pubescent.....
- C. Clypeus smooth and almost without punctures *laeviceps*, Blackb.
- CC. Clypeus strongly and closely rugulose *simulator*, Blackb.
- BB. Upper surface clothed with erect hairs *pygidialis*, Blackb.
- AA. Antennæ 8-jointed. Clypeus as in 3rd Section, but its upturned apex not quite reaching the level of the clypeus *rubescens*, Blanch.

H. *LÆVICEPS*, sp.nov.

Minus elongatus; postice modice dilatatus, minus nitidus; niger; antennis palpisque testaceis; tarsis pygidiique apice piceo-ferrugineis; capite prothoraceque vix manifeste, elytris sparsius sat fortiter, pygidio crebrius sat fortiter, punctulatis; clypeo antice fortiter triangulariter emarginato; antennis 9-articulatis; unguiculis bifidis. [Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

The head and prothorax are less shining than the elytra, and their puncturation is very fine, faint and sparing, scarcely visible under a strong lens; the reflexed margin of the clypeus is very wide at the sides but fine in the middle, the surface of the reflexed margin evidently punctulate; the labrum (viewed from above) is strongly concave in front; the surface of the clypeus is quite continuous with that of the rest of the head, and the clypeal suture is entirely obsolete. The prothorax is a little more than half again as wide as long, and its base a little more than a third again as wide as its front, which is gently bisinuate with strongly produced angles; the sides are gently arched, the hind angles (viewed from above) well-defined and slightly directed hindward; the base is widely and gently lobed in the middle. The pygidium has a keel down the middle which does not reach the apex. The elytra are scarcely visibly wrinkled transversely, but bear some obscure stria-like longitudinal wrinkles; they are truncate at the apex and the lateral fringe is not continued round the apex

which is devoid of a distinct membranous border ; they are finely but strongly, and not closely punctured ; they have scarcely any pubescence, but the specimen before me may possibly be abraded. The metasternum and hind coxæ are rather sparingly (especially in the middle) and strongly punctured,—the ventral segments much more closely. The ventral series are fairly defined, consisting of fine long hairs. The hind coxæ are much shorter than the metasternum, and evidently longer on the external margin than the second ventral segment. The hind femora are not much wider, but very much longer than the intermediate with the inner apical angle very feeble. The tibiæ are long and slender.

Evidently allied to *H. gracilipes*, but at once distinguishable, *inter alia*, by the triangularly emarginate clypeus, differently shaped labrum, and almost impunctate head and prothorax.

Near Adelaide.

H. SIMULATOR, sp.nov.

Sat elongatus ; postice vix dilatatus ; sat nitidus ; pube cinerea minus dense vestitus ; niger, plus minus picescens ; antennis testaceis, palpis pedibusque rufescentibus ; crebre fortius (elytris minus fortiter) punctulatus ; clypeo antice fortiter triangulariter emarginato ; antennis 9-articulatis ; unguiculis bifidis.

[Long. $3-4\frac{1}{2}$, lat. $1\frac{3}{8}-2$ lines.

The structure of the head, clypeus and labrum scarcely differs from that in *H. leviceps*, except that the clypeal suture is marked by a fine elevated line, which is angulated in the middle ; the entire head, however, is closely and rather strongly punctulate. The prothorax, also, scarcely differs from that of the same species except in being slightly more transverse and closely and rather strongly (not quite so strongly as the head) punctured. The elytra are very closely and rather finely punctured with much very fine transverse wrinkling ; they are decidedly narrow and elongate, their apices somewhat truncate ; they have no striæ except (in some examples) some indication of a sutural stria ; the lateral fringe is not continued in any conspicuous manner round the apex which has no distinct membranous border. The pygidium

is closely and rather finely punctuate and is clothed with long erect hairs. The metasternum and hind coxæ are punctured closely and moderately strongly at the sides, much less closely in the middle,—the ventral segments rather evenly and closely, but the punctures are feeble at the sides and stronger in the middle. The ventral series consist of fine hairs and are rather conspicuous. The hind coxæ are much shorter than the metasternum and not much longer on the external margin than the second ventral segment. The hind femora are evidently wider and very much longer than the intermediate, with the inner apical angle very feeble. The tibiæ are long and slender.

This species is allied to *H. gracilipes* and *læviceps*.

Adelaide district; not rare.

H. PYGIDIALIS, sp.nov.

Sat elongatus; postice vix dilatatus; sat nitidus (capite prothoraceque subopacis); ferrugineus; supra pilis validis erectis sat elongatis (capite prothoraceque crebrius, elytris minus crebre) vestitus; capite crebre rugulose, prothorace et elytris sparsim sat crasse nec rugulose, punctulatis; pygidio sparsim granulato; clypeo antice profunde triangulariter exciso; antennis 9-articulatis; unguiculis appendiculatis. [Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

The anterior emargination of the clypeus (of which the reflexed border is finely continuous) is so deep as to indent it half way to the base; its surface does not quite form an even continuous plane with that of the rest of the head; the impressed clypeal suture is fairly distinct, and is angulated in the middle. The prothorax is nearly twice as wide as long, and is moderately narrowed in front with sharp and moderately produced front angles; the sides diverge sinuately from the front to behind the middle, where they are strongly rounded, and then converge in a continuous curve to the base, with which they do not form a distinct angle; the hind outline of the segment is strongly convex all across, but there is no distinct lobe; the sculpture of its

surface consists of large punctures which are neither deep nor close, from each of which a strong erect hair springs. The elytra have scarcely any indication of striæ; their sculpture consists of large and small punctures (the large ones smaller than those of the prothorax, and bearing hairs which are finer than those of the prothorax) rather confusedly mingled; the lateral fringe is continuous round the apex, which has a very wide membranous border. The metasternum and hind coxæ (especially the latter) are faintly punctured—particularly in the middle—and are very nitid; the ventral segments are sub-opaque and lightly punctured—moderately at the sides, sparingly in the middle. The ventral series consist of long hairs, and are much confused with other hairs. The hind femora are not much wider than the intermediate, their inner apical portion well defined and knife-edge-like, but not sharply angled. The hind coxæ are much shorter than the metasternum, but considerably longer on the external margin than the second ventral segment. The pygidium presents the unusual character of being somewhat strongly inclined under the body (instead of vertical or nearly so, as in most species of the genus).

Near Adelaide.

H. RUBESCENS, Blanch.

H. rubescens, Blanch., Cat. Coll. Ent., 1850, p. 111.

I have before me specimens from Kangaroo Island of an insect which I have no doubt is this species. As the original description is very brief I here supply a fuller one.

Moderately elongate, and but little dilated behind. Of a shining piceous colour tending to reddish,—especially on the prothorax,—the antennæ and palpi testaceous red, the legs pitchy red. The labrum is turned upward as in the species of Sect. III., but does not quite reach the level of the surface of the clypeus. The clypeus is widely and gently emarginate (chiefly in an upward direction, *i.e.*, through the transverse convexity of its front) and its reflexed margin is continuous; it forms a nearly even plane

with the rest of the head, the clypeal suture being very fine and angulated; its surface is closely and rather finely rugose. The remainder of the head (which with the clypeus is clothed more closely than the prothorax and elytra with semi-erect brown hairs) is punctured sparingly and rather faintly, uniformly with the prothorax. The prothorax is a little more than half again as wide as its length down the middle, and the base is about half again as wide as the front, which is rather strongly emarginate with acutely produced angles; the sides are only lightly rounded (their greatest divergence being a little behind the middle) and, viewed from above, seem to form almost right angles with the base which is moderately lobed in the middle; its surface is clothed uniformly with the elytra, and much more sparingly than the head, with moderately long semi-erect light brown hairs. The elytra are non-striate, and are transversely wrinkled and punctured a little more closely and a little more strongly than the prothorax; their lateral fringe is not continued in any conspicuous way round the apex, which, however, has a distinct membranous border. The pygidium is not keeled and is finely and moderately closely punctured. The metasternum, hind coxæ, and ventral segments are punctured rather finely and closely (a little more sparingly and strongly in the middle,—especially the hind coxæ); the hind coxæ are much shorter than the metasternum, and a little longer on the external margin than the second ventral segment; the ventral series consist of fine hairs, and are much confused with other hairs. The hind femora do not differ much from the intermediate; their inner apical angle rather well defined; the puncturation of their undersurface rather confused on the external half. Claws bifid.

[Long. $4\frac{3}{5}$, lat. $2\frac{1}{5}$ lines.

N.B.—A specimen taken by my friend, Mr. J. Anderson, at Port Lincoln, is larger (long. $5\frac{1}{2}$ lines) with the clypeal margin scarcely distinct in the middle, and the reddish tone scarcely noticeable even on the prothorax, but I think it can hardly be treated as distinct.

3RD SECTION.—UPPER EDGE OF LABRUM RISING AT LEAST TO A
LEVEL WITH THE PLANE OF THE CLYPEUS.

Sub-section 1. Antennæ 8-jointed.

Sub-sub-section 1. Claws bifid.

A. Species less than $3\frac{1}{2}$ lines in length.

B. Elytra unicolorous.

C. Pilosity light ferruginous in colour *submetallicus*, Blackb.

CC. Pilosity white (or nearly so)..... *Lindi*, Blackb.

BB. Elytra with an apical red spot..... *maculatus*, Blackb.

AA. Species over $4\frac{1}{2}$ lines in length..... *capillatus*, MacI.

H. CAPILLATUS, MacI.

H. capillatus, MacI., P.L.S.N.S.W. (2) III, p. 916.

Of this species (described on specimens from King's Sound in N.W. Australia) I find an example among the *Coleoptera* collected by Mr. J. P. Tepper in the N. Territory of S. Australia. Mr. Macleay speaks of the elytra as having three faint striæ on either side of the suture; the N. Territory specimen before me has no striæ at all, and that from King's Sound has only faint traces of *one*. The original type is no doubt more distinctly striated than either of these, but, as far as my observations go, the striation of the elytra in *Heteronyx* (at least with a very few exceptions) is quite a valueless character, as true striation hardly exists in the genus and such apparent simulation of it as is occasionally traceable is a mere individual peculiarity, and is never, I think, connected with anything like a linear arrangement of puncturation. I never treat it in my descriptions as a character of any importance.

The following characters are not noticed in Mr. Macleay's description of the species, and I am indebted to him (as in the case of some other species) for sending me an example with a view to my supplementing his diagnosis. Upper margin of labrum rising exactly to a level with the surface of the clypeus; antennæ 8-jointed; teeth of front tibiæ strong and acute; hind coxæ not much shorter than metasternum and about twice as long on external margin as second segment of hind body; ventral series consisting of

hairs and moderately conspicuous; hind femora not much wider than intermediate, confusedly punctured all over their under-surface, and with the inner apical angle prominent but rounded off; claws strongly bifid.

H. SUBMETALLICUS, sp.nov.

Sat brevis; postice leviter dilatatus; minus nitidus; setis longis erectis ferrugineis minus crebre vestitus; vix perspicue punctulatus; labro clypeum leviter superante; antennis 8-articulatis; unguiculis bifidis. [Long. $2\frac{3}{8}$, lat. $1\frac{2}{5}$ lines.

The upper edge of the turned up labrum is wide, slightly angulated in the middle and rises above the surface of the clypeus; the latter is scarcely concave in front and has no reflexed margin in the part overtopped by the labrum; it is distinctly separated from the rest of the head by a well-defined impressed slightly arched suture; the whole surface of the head is rugulose rather than distinctly punctured. The prothorax is scarcely half again as wide as long, its base bearing a similar proportion to its front margin which is gently concave with angles sharp but little produced; its sides are rather strongly rounded, the hind angles (viewed from above) being scarcely defined; the base is moderately bisinuate with a fairly defined lobe; the surface is obscurely and faintly uneven but without defined puncturation. The surface of the elytra bears a faint sculpture similar to that of the prothorax, and in addition a row of fine granules close to the suture on either side, outside which is an obscure indication of a stria (noticeable only in certain lights); the lateral fringe is hardly distinct from the erect pilosity of the surface and is not conspicuous round the apex, which has a distinct membranous border. The sculpture of the underside is quite obsolete. The hind coxæ are scarcely shorter than the metasternum and are (on the external margin) quite twice as long as the second ventral segment. The ventral series consist of very long fine hairs. The hind femora are very broad, their inner apical angle defined but not in the least produced, their surface bearing the usual coarse serial

punctures. The legs are more shining than the other parts of the insect, and are stout, with distinct puncturation. The lower two teeth of the anterior tibiae are fairly sharp and strong, the uppermost tooth is small and blunt.

This species belongs to a small and isolated group of *Heteronyx* (grouping the species by their facies), of which the next two may be regarded as members. They bear much general resemblance to *Haploopsis*, which however has simple claws.

A single specimen occurred to me near Port Lincoln.

H. MACULATUS, sp. nov.

Sat brevis; postice leviter dilatatus; sat nitidus; setis longis erectis pallidis minus crebre vestitus; niger, antennis pedibus et elytrorum apice rufescentibus capite sparsim minus crasse, prothorace elytrisque crassissime nec profunde (illo sparsim his minus sparsim), punctulatis; labro clypeum sat fortiter superante; antennis 8-articulatis; unguiculis bifidis.

[Long. 2 (vix), lat. 1 line.

The head and clypeus scarcely differ from those of the preceding species in any respect except in being nitid, with more distinct puncturation, and the labrum more strongly rising above the surface of the clypeus. The prothorax is nearly twice as wide as long, its base more than half again as wide as its front margin, which is very lightly convex with well defined but not produced angles, the sides arcuately narrowed from base to front, the hind angles (viewed from above) fairly well defined, the base very lightly bisinuate and widely and gently lobed in the middle. The extremely coarse rugosity (scarcely to be called defined puncturation) of the elytra has a slight linear tendency which gives in some lights a slight simulation of striation, and there is a good deal of transverse wrinkling; the lateral fringes are not distinct from the general pilosity. The underside and legs scarcely differ from those of *H. submetallicus*, except in being very nitid with the sterna, coxæ, and ventral segments distinctly punctulate—very sparingly in the middle, but more closely at the

sides. On the anterior tibiæ the uppermost of the external teeth is small, but well defined and sharp.

Very distinct by the red apex of the elytra, forming a defined round spot on either side.

A single specimen occurred to me on Yorke's Peninsula.

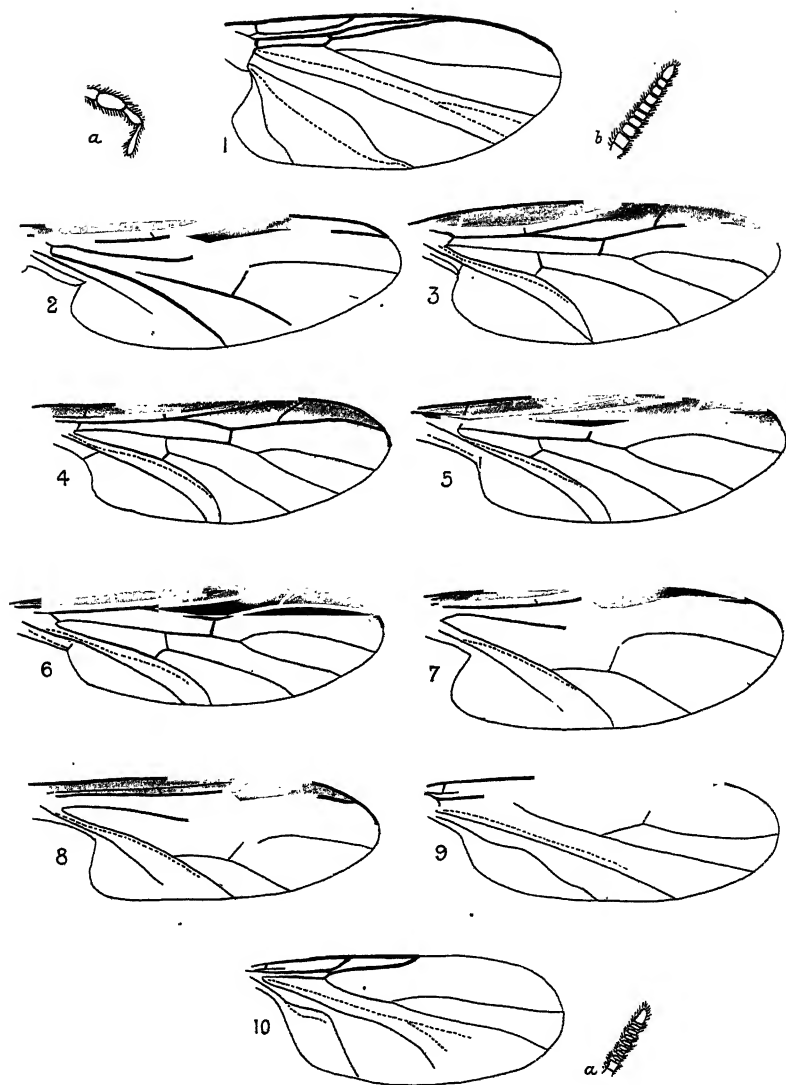
H. LINDI, sp.nov.

Sat brevis; postice vix dilatatus; minus nitidus; setis longis erectis pallidis minus crebre vestitus; niger, antennis pedibusque picescentibus; capite sparsim subtilius (clypeo nonnihil crassius crebrius), prothorace sparsim subtiliter, elytris vix perspicue, punctulatis; pygidio sparsim granulato; labro clypeum vix superante; antennis 8-articulatis; unguiculis bifidis.

[Long. 2, lat. 1 line.

Closely allied to *H. maculatus*, and scarcely differing from it on the upper surface except as indicated in the Latin diagnosis, in the absence of the apical red spot, in the slightly less transversity of the prothorax, and in the presence of some faint scratchy striæ (especially one near the suture) on the elytra, the surface of which, though not nitid, would be very smooth were it not for some obscure roughnesses which form the bases of the long hairs. The underside scarcely differs from that of *H. submetallicus* except in being a little more shining, with puncturation (though sparingly and lightly impressed) distinct; whereas in *submetallicus* it is so faint as to be hardly indicated when viewed under a very strong lens. I have felt some little hesitation in regarding this species as distinct from *submetallicus*, but have concluded that the above-named difference, together with the much smaller size of *H. Lindi*, its having no tendency to metallic colouring, its pilosity being nearly white (instead of ferruginous), and the hind angles of its prothorax appearing, when viewed from above, evidently more defined, can hardly be regarded as indicating a mere variety.

Port Lincoln.



DIPTERA OF AUSTRALIA.

BY FREDERICK A. A. SKUSE.

PART IV.—THE SIMULIDÆ AND BIBIONIDÆ.

(Plate xxxix.)

The families Simulidæ and Bibionidæ conclude the first subdivision of the Nematocera; the former contains only the single genus *Simulium*, Latr., while the latter embraces several genera distributed amongst the four groups—Bibioninæ, Hesperinæ, Lobogastrinæ, and Scatopsinæ. All the known Australian Bibionidæ are referable to the first and last of these. Judging from the material before me, neither of these families appears well represented in this country, but it is more than probable that the number of exponents known to me is very far from exhaustive. Eleven species of *Bibio* stand recorded from Australia, but the descriptions of six of these—five by Macquart and one by Jænnicke—are unfortunately not accessible to me at present; four of the remaining five are certainly only different names for the same species; while the fifth, that of *B. substitutus*, Walk., is much too vague to be of much service for identification. *B. imitator* is widely distributed in Australia, and it occurs also in New Zealand; but I have seen no other species of this genus in the country. In *B. fulvipennis*, Macquart has described the male, and in *B. ruficoxis* the female of *B. imitator*, characterised by Walker in 1835. *B. helioscops*, Schiner, is identical with the male of the latter species. *Plecia dimidiata* and *Dilophus longirostris*, Macq., both of which are now re-described, complete the sum of the hitherto known Australian Bibionidæ. To these I add descriptions of three very distinct species of *Plecia*, one of *Dilophus*, and two of *Scatopse*.

The generic diagnoses hereafter given are necessarily incomplete, since the works of authors subsequent to Macquart, containing these in a more detailed and improved form are not at hand for reference, if indeed in the country. Therefore, without generalizing on the strength of the meagre and local material at my disposal, I have been compelled to adopt the only alternative, to minutely describe individual species, and point out some of the apparent discrepancies in the old descriptions.

SIMULIDÆ.

Genus I. SIMULIUM, Latr.

Simulium, Latreille, Hist. Nat. Crus. et Ins. XLV. 1804, p. 294; Meigen, Syst. Besch. I. 1818, p. 289; Macquart, S. à B. Dipt. I. 1834, p. 173, etc.

"Fourth joint of the palpi a little elongated and slender. Antennæ cylindrical, 11-jointed; the two first joints separated from the others. Eyes round. Ocelli wanting. First joint of the tarsi as long as the others taken together. Wings very broad; basal and marginal cells very narrow."

Obs.—There are only four joints to the palpi. In the following species it will be seen from the description that the palpi differ from those of *S. trifasciatum*, Curt., (Brit. Ent. XVI. 1839, p. 765), and Meigen's description, particularly in the length of the last joint. Latreille, Meigen, Macquart, and Curtis, in their diagnoses of this genus, all describe the antennæ as composed of 11 joints, and Meigen and Curtis have both illustrated this by figures, but in the following, which is a peculiar exception in this respect, the number is only 2+8 joints. The number of abdominal segments is eight, the last one small.

This genus is known from many parts of the world, and occurs in all climates. The insects are generally known by the name of "sand-flies," and being provided with a fully developed mouth,

are, like the mosquitoes, very tormenting to mankind and the lower animals. In South America one or more species of *Simulium* goes by the name of "mosquito." In North America it is called the "black fly." *Simulium columbatschense*, Sch., seems to be the most dreaded species; it inhabits Hungary, and cattle are said to sometimes succumb to its attacks. Hagen (E. M. Mag. Vol. XIX. No. 227, p. 254) notes a N. American species which feeds upon the blood of the chrysalids of a species of butterfly (*Pieris menapia*).

I have only twice found specimens of the following described species, and then only in very limited numbers, and I know no other instance of its capture. It seems rare and local. The so-called "sand-fly" of this country is a species of *Ceratopogon*, or probably more than one species, only too abundant in many places, and inflicting very painful "bites."

The larvæ of Simulidæ are aquatic.

173. *SIMULIUM FURIOSUM*, sp.n. (Pl. xxxix, fig. 1).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♀.—Length of antennæ..... | 0·017 inch | ... | 0·42 millimètre. |
| Expanse of wings..... | 0·095 × 0·045 | ... | 2·39 × 1·13 |
| Size of body..... | 0·080 × 0·025 | ... | 2·02 × 0·62 |

Antennæ short, black, densely covered with a microscopic hoary pubescence; 2- + 8-jointed, second joint of the scapus twice the length of the first, first flagellar joint about as large as the second joint of the scapus, three following short, next three large, terminal joint elongate-ovate (fig. 1b.). Head, hypostoma, and palpi black, with a minute yellowish pubescence, very dense on the latter; joints of the palpi as follows: first joint small, second twice the length of the first, stout, elongate-ovate, third somewhat shorter than the second, more slender, claviform, a little emarginate on the inner side near the apex, fourth joint somewhat longer than the second, slender, sub-cylindrical, a little dilated towards the apex (fig. 1a.). Eyes deep black. Thorax black, opaque, indistinctly

divided by three striæ, beginning below the anterior margin and terminating before the scutellum; rather densely covered, more especially anteriorly, with a microscopic pale yellow pubescence; pleuræ, pectus, scutellum, and metathorax black, opaque. Halteres pallid, the base of the stalk black, with a minute pale pubescence. Abdomen black, opaque, the third to the seventh segment with a square median patch of intense black, densely clothed with short hairs. Legs brownish-black, with a pale yellow pubescence, interspersed with longer hairs; genua yellow; metatarsus of the hind-legs nearly twice the length of the four following tarsal joints, and longer than the tibiæ of the intermediate or fore-legs. Wings longer than the entire body, hyaline, brownish at the root; costal vein black, auxiliary and first two longitudinal veins sordid yellowish-brown; third, fourth, fifth, and sixth longitudinal veins pale. First and second longitudinal combining with the costa before the tip of the fourth longitudinal vein; tip of the costal vein nearer the apex of the wing than the tip of the anterior branch of the fork of the third longitudinal; marginal cross-vein about as long as the petiole of the second sub-marginal cell. Wing-fold between the third and fourth longitudinal veins furcate before joining the posterior border; wing-fold between the fifth and sixth longitudinal veins nearer the former, bent abruptly forward at its tip, and joining the wing-border very close to the tip of the fifth longitudinal vein; sixth longitudinal vein complete.

Hab.—Gosford and Berowra (Skuse). August and September.

BIBIONIDÆ.

Genus 1. BIBIO, Geoff.

Bibio, Geoffroy, Ins. II. 1764, p. 571, 3; *Hirtea*, Fabricius, Zetterstedt, etc.; *Bibio*, Meigen, Syst. Besch. I. 1818, p. 309; Macquart, S. & B. Dipt. I. 1834, p. 177, etc.

"Head almost entirely occupied by the eyes in the ♂; small, elongated, and inclined in the ♀. Proboscis projecting; terminal labella indistinct; labrum and tongue ciliated towards the extremity. Palpi 5-jointed; first joint very small. Antennæ cylindrical, perfoliated, inserted under the eyes, 9-jointed; two first joints separated from the others, the rest very short. Eyes hairy in the ♂, naked, small and a little prominent in the ♀. Abdomen terminated with two hooks and two tubercles in the ♂. Legs hairy; fore femora short, dilated in the ♀; hind pair elongated in the ♂; tibiæ grooved; fore pair short, dilated, terminated by a long and a short spine; posterior pair dilated in the ♂. Joints of the tarsi elongated; three pulvilli at the extremity. Two basal cells to the wings."

Obs.—Macquart does not mention in the above that *Bibio* has three ocelli, and he says nothing about the shape of the joints of the palpi. In *Bibio imitator* these are as follows: First joint very small, second cylindrical, the width and nearly three times the length of the first, third robust, obovate, as long as the second, fourth rather shorter and not as wide, somewhat claviform, fifth joint rather more slender but about the length of the last, somewhat claviform. This pretty well agrees with the diagnosis given by Curtis (Brit. Ent. Vol. 3, 1826, p. 138) from dissections of *B. venosus*. Meigen, Curtis, and Macquart all pronounce the number of joints of the antennæ to be nine, and the first two authors have carefully figured these organs, but in both ♂ and ♀ specimens of *B. imitator* there are distinctly 2- + 8-joints, the last joint somewhat smaller than the one preceding it, though by no means so insignificant as to be liable to be overlooked by anyone who examined the antennæ. The first flagellar joint in *B. imitator* is as large as either joint of the scapus, the remainder short and transverse. Abdomen with eight segments. There is great diversity usually in the sexes.

The females deposit their eggs in the ground or in dung, where the larvæ feed and the transformations take place. The full-grown insects are sluggish in their movements, and are found

commonly upon fruit-trees and on flowers. Sometimes called "garden-flies." The genus is of world-wide distribution.

174. *BIBIO IMITATOR*, Walker. (Pl. xxxix., fig. 2, ♂).

Bibio imitator (♂ and ♀), Walk., Entom. Mag. II. 1835, p. 470; *B. fulvipennis* (♂) and *B. ruficoxis* (♀), Macquart, Diptères Exotiques, 4th Suppl. 1850, p. 17, Nos. 10 and 11; *B. helioscops* (♂), Schiner, Diptera der Novara-Expedition, Zool. Theil, Band II. p. 20, No. 8.

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0·025 inch | ... | 0·62 millimètre. |
| Expanse of wings..... | 0·220 × 0·075 | ... | 5·58 × 1·89 |
| Size of body..... | 0·270 × 0·055 | ... | 6·85 × 1·39 |
| ♀.—Length of antennæ..... | 0·030 inch | ... | 0·76 millimètre. |
| Expanse of wings..... | 0·290 × 0·110 | ... | 7·35 × 2·79 |
| Size of body..... | 0·285 × 0·070 | ... | 7·22 × 1·77 |

♂.—Antennæ much shorter than the head, moderately robust, dull black, 2- + 8-jointed, densely covered with a minute pubescence, which has an almost hoary reflection in a certain light. Head, ocelli, and palpi black; the former as wide as the thorax. Eyes black (or having a dull cupreous-red appearance after death), beset with minute black hairs. Thorax black, nitidous, densely covered with golden-yellow hairs; line dividing the collare and mesothorax, towards the humeri, and posterior margin between the scutellum and origin of the wings, tinged with ochraceous (this colour is not so distinct or scarcely perceptible in some specimens); scutellum rather densely covered with golden-yellow hairs. Halteres ochraceous. Abdomen flattened, at the base about the width of the thorax, twice the length of the latter, sub-linear, black, opaque, nitidous between the segments, clothed with pale yellow hairs, the latter most numerous on the first two segments; forceps not the width of the

terminal segment, black, distinct. Legs black, nitidous, densely pubescent; mucrones of the fore tibiæ and tibial spurs of all legs deep brown; pulvilli pallid. Wings the length of the thorax and abdomen taken together, pale smoky-brown, darker anteriorly; stigma tolerably distinct; base of wings and veins ochraceous; the costal, first two longitudinal veins, and marginal cross-vein darker, and the middle cross-vein paler than the rest. Sub-costal cross-vein very indistinct. Third longitudinal vein originating a short distance before the marginal cross-vein, its posterior branch not quite reaching the wing-margin; petiole of the fork twice the length of the marginal cross-vein; middle cross-vein joining the third longitudinal at or somewhat beyond the base of the fork; fourth longitudinal vein very stout; anterior branch of the fourth longitudinal detached at its base and not quite reaching the wing-margin; fifth longitudinal rudimentary.

♀.—Antennæ rather longer and stouter than those of the ♂, in other respect similar. Head narrow, brown or ferruginous-ochraceous, with golden-yellow hairs. Eyes, ocelli, palpi and proboscis black; the former beset with microscopic hairs. Thorax ferruginous-ochraceous, nitidous, densely covered with golden-yellow hairs. Halteres ochre-yellow. Abdomen robust, the width of, or somewhat wider than the thorax, about twice its length, ochre-yellow, nearly opaque, clothed with pale yellow hairs; lamellæ of the ovipositor ochre-yellow. Coxæ and trochanters ferruginous-ochraceous, nitidous. Femora,* tibiæ and tarsi black, nitidous, densely pubescent; mucrones of the fore tibiæ, and tibial spurs of all legs brown; pulvilli pallid. Wings a little longer than the abdomen, smoky-brown, considerably darker than those of the ♂; stigma distinct; base ochraceous; veins smoky-ochraceous. Sub-costal cross-vein very indistinct. Marginal cross-vein $\frac{3}{4}$ the length of the petiole of the fork of the

*In dried specimens the genua generally assume a ferruginous-ochraceous tinge.

third longitudinal; middle cross-vein joining the third longitudinal a little beyond the base of the fork; the rest as in the ♂.

Hab.—New Holland (Walker); ♂, East coast of New Holland, ♀, Tasmania (Macquart); ♂, Sydney (Novara Exp.), common (Masters and Skuse); Knapsack Gully, Blue Mountains (Masters); Saddleback Mountain, near Kiama (Skuse); also New Zealand (Novara Exp.). September to January. Many specimens taken *in copula*.

Obs.—This is without doubt the *B. imitator* of Walker, and most probably also his *B. substitutus*, but the description of the latter is too imperfect to be of any use. Schiner's *B. helioscops* only differs in the colour of the halteres, but surely that is scarcely sufficient to constitute more than a mere variety; in many of my specimens the halteres are tinged with black, but this I attribute to their age. Macquart has described each sex under a different name evidently because he received his specimens from two distinct localities.

175. BIBIO SUBSTITUTUS, Walker.

B. substitutus, Walk., List. Dipt. Brit. Mus. 1848, Part I. p. 121.

“♀.—*Lutea, capite piceo, antennis pedibusque nigris, coxis luteis, alis nigro-fuscis.*

“Body orange; head piceous; feelers and eyes black; legs black; hips orange; wings dark brown; brands indistinct; fore border veins brown, the other veins tawny; poisers orange. Length of the body 3 lines, of the wings 7 lines.

“New Holland.”

176. BIBIO MARCI, Geoffr.

B. Marci, Geoffroy, Hist. Nat. des Ins. II., 1764, p. 571, 3; Loew, Linn. Entom. I. 1846, p. 343, 2.

♂ specimens completely resembling those of Europe were found by Macquart amongst the Diptera collected on the east

coast of Australia by M. Verreaux (Dipt. Exot. 4th Suppl. 1850, p. 18), but I have not yet discovered specimens.

The descriptions of (177) *B. clavatus*, Macq.; (178) *B. nigrithorax*, Macq.; (179) *B. serricornis*, Macq.; (180) *B. rufiventris*, Macq.; (181) *B. rubiventris*, Macq.; and (182) *B. elegans*, Jænnicke, recorded from Australia in Walker's "Notes on Diptera (1874)," are at present inaccessible to me. It would not surprise me if most of these eventually prove synonymous with *B. imitator*. I have specimens of the latter which might well be called *clavatus*, *nigrithorax*, *rufiventris* or *rubriventris*. If in killing, the ♀ be left too long in the chloroform bottle, all the bright colouring disappears, and the abdomen assumes a black appearance.

Genus 2. PLECIA, Wied.

Plecia, Wiedemann, Auss. Zw. I. 1828, p. 72; Macquart, S. à B. Dipt. I. 1834, p. 175, etc.

"Head small, hemispherical, not so wide as the thorax in the ♀. Proboscis projecting, thick. Labrum rather large, pointed. Palpi five-jointed; first joint small; third large, conical. Face as long as the front, convex, projecting to the upper part. Front rather wide, carinated in the ♀. Antennæ perfoliated, inserted a little lower than the middle of the eyes, 11-jointed; the first two joints short, cylindrical, little separated from one another; third rather large, cyathiform, a little elongate; the following joints short, a little rounded, diminishing somewhat in size; the last very small. Eyes convex, rounded. Thorax with two indented lines. Legs nearly naked; fore-legs: femora elongated, dilated at the apex; tibiæ elongated; first joint of the tarsi a little elongated; the rest rather short. Wings once longer than the abdomen in the ♀; two basal cells; two marginal ♀; second posterior cell petiolated."

Obs.—I must remark here that the above number of antennal joints cannot be taken as a generic character, as in the appended descriptions it will be seen that although *P. amplipennis* ♀, has

2-+9-joints, *P. ornaticornis* has 2-+8-joints in the ♂, and 2-+9-joints in the ♀, *P. erebea* 2-+8-joints in both sexes, and lastly *P. dimidiata* 2-+6- also in both sexes. In all these cases the first joint of the flagellum (or as Macquarts puts it the "third joint" of the antennæ) is larger than any other, and the terminal joint is always extremely small and nipple-shaped. As Macquart was the original describer of *P. dimidiata*, he should have drawn attention to the deficiency of joints. Possibly describers are two apt sometimes to take things for granted. The palpi are much longer than the antennæ. Abdomen with eight segments.

The number of known species belonging to this genus is small. It does not appear to be represented in Europe, and the majority of examples have been described from South America, Asia and Eastern Isles.

183. *PLECIA AMPLIPENNIS*, sp.n. (Pl. xxxix, fig. 3.)

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.045 inch | ... | 1.13 millimètres. |
| Expanse of wings..... | 0.390 × 0.140 | ... | 9.89 × 3.55 |
| Size of body..... | 0.300 × 0.070 | ... | 7.62 × 1.77 |

Antennæ the length of the head, dull black, densely covered with a minute pubescence, 2-+9-jointed, all the joints furnished with very short verticils. Head, ocelli, and palpi dull black. Eyes dull black or purplish-black, beset with minute hairs. Thorax, pleuræ, pectus, scutellum, and metathorax entirely of a uniform bright ochreous or ferruginous-ochreous, opaque, with no pubescence. Halteres long, black, the base of the stem ochreous or ferruginous-ochreous, with a minute pubescence. Abdomen about the width and more than twice the length of the thorax, black, almost opaque, somewhat shining, densely clothed with short black hairs; ovipositor short. Legs black, except the coxæ which are brown, nitidous, densely pubescent; tibial spurs black; pulvilli yellow. Wings longer than the body, smoky-brown inclining to fuscous, darker anteriorly; stigma tolerably

distinct; veins umber-brown. Costal vein extending beyond the tip of the second longitudinal vein rather more than one-third the distance from that to the tip of the anterior branch of the third longitudinal fork; auxiliary vein reaching the costa immediately before the base of the third sub-marginal cell, united to the first longitudinal at the tip of the marginal cross-vein by an indistinct sub-costal cross-vein; first longitudinal vein joining the costa opposite the middle of the anterior branch of the second longitudinal vein; anterior branch of the second longitudinal vein sinuous; marginal cross-vein perfectly straight, twice, or rather more than twice, the length of the petiole of the third sub-marginal cell; branches of the third longitudinal fork not very divergent, the anterior branch bent posteriorly towards its tip; middle cross-vein originating near the base of the anterior branch of the fourth longitudinal fork, joining the second longitudinal vein opposite or imperceptibly beyond the tip of the marginal cross-vein; tip of the anterior branch of the fourth longitudinal fork bent inwards; fifth longitudinal vein complete, meeting the tip of the posterior branch of the fourth longitudinal vein on the wing-margin.

Hab.—Cairns, Northern Queensland (Froggatt).

Var. β.—Three ♀ specimens differ from the above in having dark, fuliginous wings (in two instances these are much larger than the above measurements), and the fifth longitudinal vein terminates on the wing-border a little before the tip of the posterior branch of the fourth longitudinal fork.

Hab.—Barron and Mulgrave Rivers, Northern Queensland (Froggatt).

Var. γ.—A ♀ specimen with rather pale wings, the fifth longitudinal vein terminating on the wing-border at the tip of the posterior branch of the fourth longitudinal fork, and having the legs of reddish-brown colour.

Hab.—Port Denison (Froggatt).

Obs.—A ♂ specimen in the Macleay Museum from Eramanga, New Hebrides, is not distinguishable from the last variety. Some smaller ♂ and ♀ examples from New Guinea only differ from the Eramanga variety in having blacker legs, and the fifth longitudinal vein joining the wing-border a little before the tip of the posterior branch of the fourth longitudinal vein.

184. *PLECIA ORNATICORNIS*, sp.n. (Pl. xxxix., fig. 4, ♂).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0.030 inch | .. | 0.76 millimètre. |
| Expanse of wings..... | 0.230 × 0.080 | ... | 5.84 × 2.02 |
| Size of body | 0.230 × 0.040 | ... | 5.84 × 1.01 |
| ♀.—Length of antennæ..... | 0.040 inch | ... | 1.01 millimètre. |
| Expanse of wings..... | 0.280 × 0.100 | ... | 7.10 × 2.54 |
| Size of body | 0.230 × 0.045 | ... | 5.84 × 1.13 |

♂ and ♀.—Antennæ in the ♂ shorter than the head, 2-+8-jointed, in the ♀ as long as the head, 2-+9-jointed, in both cases the terminal joint exceedingly small and nipple-shaped, densely covered with a minute pubescence, all the joints with very short verticils; first joint of the scapus and all the flagellar joints fuliginous, the second joint of the scapus ochraceous. Head, eyes, ocelli and palpi dull black; eyes in the ♀ beset with minute black hairs. Thorax, pleuræ, pectus, scutellum and metathorax entirely of a uniform bright ochreous, opaque, with no pubescence. Halteres long and slender, black, the base of the stalk ochre-yellow, with a minute pubescence. Abdomen black, almost opaque, somewhat shining, densely clothed with black hairs; in the ♂ more slender than the thorax, and about twice its length, in the ♀ as wide as, and twice the length of, the thorax; ♂ forceps small; ♀ ovipositor short. Legs black except the coxæ, the latter ochreous nitidous, densely covered with black hairs; tibial spurs black; pulvilli pallid. Wings smoky-brown inclining to fuscous, somewhat darker anteriorly; in the ♂ as long as the

entire body, in the ♀ longer; stigma not noticeable; veins umber brown. Costal vein extending beyond the tip of the second longitudinal vein, in the ♂ one-third and in the ♀ nearly half the distance from that to the tip of the anterior branch of the third longitudinal fork; auxiliary vein reaching the costa almost opposite, but immediately before in the ♂, and in the ♀ exactly opposite, the base of the third submarginal cell; first longitudinal vein joining the costa beyond the middle of the anterior branch of the second longitudinal; anterior branch of the second longitudinal vein a little arcuated at its base; marginal cross-vein a little bent, twice the length of the petiole of the third submarginal cell; branches of the third longitudinal fork gradually divergent; middle cross-vein very distinct, originating near the base of the anterior branch of the fourth longitudinal fork, joining the second longitudinal vein in the ♂ opposite, in the ♀ a little beyond, the tip of the marginal cross-vein; branches of the fourth longitudinal considerably divergent towards their tips; fifth longitudinal vein complete, reaching the border a short distance behind the posterior branch of the fourth longitudinal vein.

Hab.—Cairns and Barron River, Northern Queensland (Froggatt).

185. *PLECIA EREBEA*, sp.n. (Pl. xxxix., fig. 5, ♂).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0.025 inch | ... | 0.62 millimètre. |
| Expanse of wings..... | 0.200 × 0.070 | ... | 5.08 × 1.77 |
| Size of body..... | 0.200 × 0.035 | ... | 5.08 × 0.88 |
| ♀.—Length of antennæ..... | 0.030 inch | ... | 0.76 millimètre. |
| Expanse of wings..... | 0.250 × 0.090 | ... | 6.35 × 2.27 |
| Size of body..... | 0.220 × 0.040 | ... | 5.58 × 1.01 |

♂ and ♀.—Wholly black. Antennæ rather robust, in the ♂ shorter than the head, in the ♀ about the length of the head, 2- + 8-jointed, densely covered with a minute pubescence, all the joints with very short verticils. Eyes not beset with hairs.

Thorax nitidous, with two longitudinal treble or quadruple rows of very short blackish hairs from the humeri to the scutellum; pleuræ and pectus dull. Halteres long and slender, with a minute pubescence. Abdomen somewhat shining, densely pubescent, more so in the ♂ than the ♀; in the ♂ about the width of the thorax, not twice its length, more robust and rather longer in the ♀; ♂ forceps small; ♀ ovipositor short. Legs densely pubescent, particularly those of the ♂; tibial spurs black; pulvilli pallid. Wings dark smoky-brown, darker anteriorly, in the ♂ as long as the body, in the ♀ longer; stigma indistinct; veins umber-brown, the costal, auxiliary, first and second longitudinal, and marginal cross-vein darker than the rest. Costal vein extending beyond the tip of the second longitudinal vein, in the ♂ one-third and in the ♀ about half the distance from that to the tip of the anterior branch of the third longitudinal fork. Auxiliary vein joining the costa over the base of the third sub-marginal cell; first longitudinal vein joining the costa before the base of the anterior branch of the second longitudinal; marginal cross-vein arcuated posteriorly at its tip, its base situated somewhat before the tip of the posterior branch of the fourth longitudinal; petiole of the third sub-marginal cell appearing as a direct continuation of the basal portion of the second longitudinal vein, more than half the length of the marginal cross-vein; branches of the third longitudinal fork widely divergent; middle cross-vein originating near the base of the anterior branch of the fork of the fourth longitudinal vein, joining the second longitudinal vein at a point as much before the marginal cross-vein as the base of the third sub-marginal cell is beyond it; fifth longitudinal vein complete.

Hab.—Lawson, Blue Mountains (Masters). January.

186. *PLECIA DIMIDIATA*, Macquart. (Pl. xxxix., fig. 6, ♂).

P. dimidiata (♂), Macq., Diptères Exotiques, Suppl. 1846, p. 20, No. 6, pl. 2, fig. 8.

♂.—Length of antennæ..... 0·020 inch ... 0·50 millimètres.

Expanse of wings..... 0·180 × 0·060 ... 4·56 × 1·54

Size of body..... 0·210 × 0·035 ... 5·33 × 0·86

♀.—Length of antennæ..... 0·020 inch ... 0·50 millimètres.

Expanse of wings..... 0·250 × 0·090 ... 6·35 × 2·27

Size of body..... 0·230 × 0·045 ... 5·84 × 1·13

♂ and ♀.—Antennæ much shorter than the head, moderately robust, stouter in the ♀ than in the ♂, dull black, densely covered with a minute pubescence, 2-+6-jointed, all the joints with very short verticils. Head, eyes, ocelli and palpi black, the eyes not beset with hairs. Thorax ferruginous-ochraceous, nitidous, the anterior portion,* from immediately below the humeri in the ♂, only very slightly on the anterior border in the ♀, dull black; no visible pubescence when viewed with an ordinary lens; pleuræ black, in the ♀ with a scarcely perceptible reddish tinge; scutellum ferruginous-ochraceous, more or less tinged with black in the ♂; pectus black; mesothorax black, the metanotum in the ♀ ferruginous-ochraceous. Halteres black, the stem long and slender. Abdomen black, somewhat shining, densely covered with black hairs; in the ♂ rather more slender than the thorax and twice its length, rather longer and more robust in the ♀; ♂ forceps small, not the width of the terminal segment; ♀ ovipositor short. Legs black, nitidous, with a dense black pubescence; tibial spurs short, black; pulvilli pallid. Wings smoky-brown, with a somewhat greyish tint,

* Macquart in his description says, "moitié antérieure du thorax d'un noir mat."

darker anteriorly; in the ♂ a little longer than the abdomen, in the ♀ longer than the whole body and considerably wider than those of the ♂; stigma tolerably distinct in the ♂, paler in the ♀; veins umber-brown. The costal, auxiliary, first and second longitudinal, and marginal cross-vein much darker than the rest. Auxiliary vein joining the costa a little before the base of the third sub-marginal cell; anterior branch of the second longitudinal vein reaching the costa a short distance beyond the tip of the first longitudinal; costal vein extending beyond the tip of the second longitudinal vein about half-way from that to the tip of the anterior branch of the third longitudinal fork; petiole of the latter half the length of the marginal cross-vein; marginal cross-vein straight, its base immediately opposite the tip of the posterior branch of the fourth longitudinal; middle cross-vein originating near the base of the anterior branch of the fork of the fourth longitudinal vein, joining the second longitudinal much beyond the apex of the marginal cross-vein; fifth longitudinal vein complete.

Hab.—Tasmania (Macquart); Sydney (Novara Exp., 1 specimen), common (Masters and Skuse); Blue Mountains, and many other localities (Masters and Skuse). September to January.

Obs.—Dr. Schiner first identified the above species as *P. dimidiata*, Macq., from a single ♂ specimen obtained here by the "Novara" expedition; he did not, however, re-describe the species. I have not the least doubt about the identity of the New South Wales and Tasmanian species, though Macquart's description of the latter is far from satisfactory.

Genus 3. DILOPHUS, Meig.

Dilophus, Meigen, Illig. Mag. II. 1803, p. 264, No. 25; Syst. Besch. I. 1818, p. 305; Macquart, S. & B. Dipt. I. 1834, p. 176.

"Head almost entirely occupied by the eyes in the ♂, very small and inclined in the ♀. Palpi 5-jointed; third joint dilated.

Antennæ cylindrical, inserted beneath the eyes; 11-jointed; third joint a little larger than the others; last four joints little distinct one from another. Eyes hairy in the ♂. Prothorax elevated, with two ranges of spines. Legs hairy; fore femora thick, grooved; tibiæ spined in front, and terminated with a coronet of eight spines; tarsi with three pulvilli. No discoidal cell to the wings."

Obs.—*Dilophus longirostris* does not differ from the above in the number of the joints to the antennæ, both ♂ and ♀ being 2- + 9-jointed; but in *D. pictipes* (♂) they are 2- + 7-jointed, the second basal joint globose and larger than the first joint of the flagellum, the last three joints of the latter being more closely united to one another. In *D. longirostris* the joints of the palpi are much more dilated than in *D. pictipes*, those of the latter being as follows: First joint small, cylindrical; second, third, and fifth joints twice the length of the first, rather thicker, the former two somewhat pyriform, the fifth joint oblong-oval; fourth joint rather more robust than the rest, obovate. Ocelli three, arranged in a triangle on the front. Abdomen with eight segments.

About fifty species are known. The genus has a wide distribution; the majority of species stand recorded from Europe and North and South America.

187. *DILOPHUS LONGIROSTRIS*, Macquart. (Pl. xxxix., fig. 7, ♀).

Dilophus longirostris, (♂ and ♀), Macquart, Diptères Exotiques, 4th Suppl. 1850, p. 17, No. 4, tab. 1, fig. 8.

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0·020 inch | ... | 0·50 millimètre. |
| Expanse of wings..... | 0·160 × 0·060 | ... | 4·06 × 1·54 |
| Size of body..... | 0·210 × 0·025 | ... | 5·33 × 0·62 |
| ♀.—Length of antennæ..... | 0·018 inch | ... | 0·47 millimètre. |
| Expanse of wings..... | 0·180 × 0·065 | ... | 4·56 × 1·66 |
| Size of body..... | 0·200 × 0·030 | ... | 5·08 × 0·76 |

♂ and ♀.—Antennæ very short, black 2- + 9-jointed ; in the ♂ inserted near the base of the proboscis, in the ♀ at about one-third of its length. Head, eyes, proboscis and palpi black ; front nitidous. Proboscis the length of the head. Palpi inserted near the extremity of the proboscis ; first joint very small, second pyriform, third dilated, larger than the rest, fourth sub-globose, fifth almost elliptical, rather smaller than the last. Thorax, pleuræ, pectus, scutellum and metathorax black, nitidous, with pale yellow hairs ; the two ranges of prothoracic spines better developed in the ♀. Halteres black, the stem more or less testaceous. Abdomen black, somewhat shining, clothed with pale yellow hairs, the latter much larger in the ♂ than in the ♀ ; in the ♂ slender, twice the length of the thorax, in the ♀ almost the width of the thorax and twice its length ; terminal lamellæ of the ovipositor black. Legs black ; in the ♀ the fore coxæ and femora more or less testaceous, tibiæ brown. Fore femora shorter and broader than the other pairs, about half the length and twice the breadth of the hind pair ; the latter claviform. Fore and intermediate tibiæ short ; fore pair with two spines near the base, and three at the middle, on the front, also a coronet of spines at the apex, these much more distinct in the ♀ than the ♂ ; intermediate tibiæ of the ♀ with an apical coronet of weak spines. In the ♂ the first four tarsal joints of the hind-legs enormously dilated, particularly the first joint, which is much wider than the femora of the same legs, second joint about the width of the apex of the tibiæ, the rest decreasing in size ; in the ♀ the tarsal joints of all legs very slender. Wings longer than the abdomen ; in the ♂ hyaline, in the ♀ with a pale yellow tint ; stigma prominent, brown ; costal, first, and second longitudinal, and marginal cross-vein brown, the rest pale ; pubescence extremely microscopic ; opaline reflections. Costal vein extending beyond the tip of the second longitudinal vein not half-way from that of the tip of the anterior branch of the fork of the third longitudinal ; auxiliary vein long, very indistinct towards its tip ; joining the costa immediately beyond the tip of the marginal cross-vein, in

the ♀ the space between the auxiliary and costa deeper yellow than the rest of the wing; sub-costal cross-vein extremely indistinct, situated opposite the base of the anterior branch of the fourth longitudinal; first longitudinal vein disappearing just before the costa, from the marginal cross-vein enveloped in the stigma; base of the marginal cross-vein situate opposite the base of the middle cross-vein; tip of the second longitudinal vein somewhat nearer the apex of the wing than the tip of the posterior branch of the third longitudinal fork; middle cross-vein issuing from the anterior branch of the fourth longitudinal vein opposite the tip of the posterior branch, joining the third longitudinal at the base of the fork; fifth longitudinal vein long, indistinct, not reaching the wing-border.

Hab.—Tasmania (Macquart); Gawler, South Australia.

Obs.—I find eight ♀'s and one ♂ in the Macleay collection labelled Gawler, South Australia, which undoubtedly belong to the species originally described from Tasmania.

188. *DILOPHUS PICTIPES*, sp.n. (Pl. xxxix, fig. 8).

♂.—Length of antennæ..... 0·010 inch ... 0·25 millimètre.

Expanse of wings..... 0·105 × 0·035 ... 2·67 × 0·88

Size of body..... .. 0·120 × 0·015 ... 3·04 × 0·38

Antennæ very short, black, 2-+7-jointed. Head, eyes, and palpi black; the former nitidous. Thorax wholly black, very nitidous, with a few pale yellow hairs. Halteres black, the base of the stem testaceous. Abdomen slender, more than twice the length of the thorax, black, nitidous, tolerably clothed with pale yellow hairs; genitalia hidden. Legs slender, testaceous, the fore coxæ and femora brighter than the rest, and the following umber-brown:—the apical half of the first joint and the whole of the remaining four joints of the fore tarsi, the apical half of the intermediate and hind femora and tibiæ, and the last three joints

of their tarsi. Coxæ and femora of the fore-legs longer and stouter than those of the other legs. Fore tibiæ spined as in *longirostris*, except that the second row of three spines is as near the apex of the tibiæ as the row of two is to the base. All tarsal joints equally slender. Wings about the length of the thorax and abdomen taken together, hyaline; stigma prominent, umber-brown; veins umber-brown, the costal, first two longitudinal veins, and marginal cross-vein rather more distinct than the third and fourth longitudinal veins; auxiliary vein yellow; pubescence extremely microscopic, brilliant green and blue reflections. Costal vein extending beyond the tip of the second longitudinal vein more than half way from that to the tip of the anterior branch of the third longitudinal fork; auxiliary vein long, almost invisible towards the tip, joining the costa immediately beyond the tip of the marginal cross-vein; an almost imperceptible trace of a sub-costal cross-vein situated as in *D. longirostris*; the space between the auxiliary and costa, yellowish; first longitudinal vein disappearing just before the costa from the marginal cross-vein enveloped in the stigma, its tip almost opposite but immediately before the tip of the anterior branch of the fourth longitudinal vein; base of the marginal cross-vein situated opposite that of the middle cross-vein, the latter scarcely visible (totally absent in some specimens); tip of the second longitudinal vein rather nearer the apex of the wing than that of the anterior branch of the fork; middle cross-vein joining the third longitudinal before the base of the fork; fifth longitudinal vein long, very pale, not reaching the wing-border.

Hab.—Knapsack Gully, Blue Mountains (Masters and Skuse).
September.

Genus 4. SCATOPSE, Geoff.

Scatopse, Geoffroy, Ins. II. 1764, p. 545, Le Scathopse noir; Meig. Syst. Besch. I. 1818, p. 299; Macquart, S. & B. Dipt. I. 1834, p. 181.

"Palpi concealed, of one distinct joint. Antennæ cylindrical, 11-jointed; the last four little distinct from one another. Eyes reniform. Wings large; one small linear basal cell; three posterior; second petiolated."

Obs.—*Scatopse* appears to have only one joint in the palpi; I could not discover another joint by repeated dissection. Meigen and Macquart both set down the number of antennal joints at eleven; in my specimens the total is 2-+8-joints, as follows:—Second basal joint larger than the first, the seven following flagellar joints short, transverse, terminal joint the length of three of the seven preceding joints, conical. There are three ocelli arranged in a triangle on the front, and the abdomen is seven-segmented.

The larvæ of *Scatopse* swarm in excrements, and in decomposed vegetable and animal matter. The flies are frequently found upon windows, on leaves of plants, in outhouses and privies, &c.

About sixty species are known, the greater number being European, and excepting the following described the remainder are American.

189. *SCATOPSE LONGIPENNIS*, sp.n. (Pl. xxxix., fig. 9.)

| | | | |
|---------------------------|---------------|-----|------------------|
| ♀.—Length of antennæ..... | 0.020 inch | ... | 0.50 millimètre. |
| Expanse of wings..... | 0.100 × 0.040 | ... | 2.54 × 1.01 |
| Size of body..... | 0.100 × 0.020 | ... | 2.54 × 0.50 |

Antennæ short, about the length of the head, black, densely covered with a very minute pubescence. Head black, with a very short yellow pubescence. Eyes black. Palpi yellow. Thorax black, nitidous, tolerably covered with a very short yellow pubescence, a yellowish spot behind the origin of each wing at the posterior corners; pleuræ black, nitidous, with a pale yellowish arcuated stripe running towards the fore coxæ; scutellum and metathorax black, nitidous. Halteres yellow, with a few very short hairs. Abdomen black, nitidous, rather densely clothed with

very short yellow hairs. Coxæ black. Femora, tibiæ and tarsi brownish-black, densely covered with very short yellow hairs. Fore coxæ and femora considerably more dilated than the intermediate or hind pairs. All tibiæ of equal thickness, the hind pair longest. Wings the length of the entire body, nearly three times as long as wide, hyaline, yellowish at the root, beautifully iridescent; costal, first and second longitudinal, and marginal cross-vein yellowish-brown, the rest very pale and indistinct. First longitudinal joining the costa at a point one-third the distance from the base of the latter to the tip of the second longitudinal; marginal cross-vein extremely short; costal vein extending slightly beyond the tip of the second longitudinal vein, terminating nearer opposite the tip of the posterior branch of the third longitudinal vein than to the tip of the fourth longitudinal vein; base of the fork of the third longitudinal situated about the middle of the wing, the anterior branch with a short indistinct transverse wing-fold issuing from it not far from the base, reaching half-way across the first sub-marginal cell; fifth longitudinal vein reaching the posterior border much beyond the tip of the first longitudinal vein.

Hab.—Sydney (Skuse). October.

Obs.—This species does not appear common, as I have only seen a single specimen. It is easily distinguished at once from the following by the length of the costal and second longitudinal veins, and the pale stripe on the pleuræ. At first I was inclined to believe this to belong to the cosmopolitan *S. notata*, but it does not quite agree with the description given by Loew (Linn. Ent. 1, 1846, p. 325), though his figure of the wing shows a venation scarcely distinguishable from that presented in the above insect.

190. SCATOPSE FENESTRALIS, sp.n. (Pl. xxxix., fig. 10, ♀).

| | | | |
|---------------------------|---------------|-----|------------------|
| ♂.—Length of antennæ..... | 0·020 inch | ... | 0·50 millimètre. |
| Expanse of wings..... | 0·080 × 0·035 | ... | 2·02 × 0·88 |
| Size of body..... | 0·075 × 0·017 | ... | 1·89 × 0·42 |

| | | | |
|------------------------|---------------|-----|------------------|
| Length of antennæ..... | 0·017 inch | ... | 0·42 millimètre. |
| Expanse of wings..... | 0·090 × 0·040 | ... | 2·27 × 1·01 |
| Size of body..... | 0·080 × 0·020 | ... | 2·02 × 0·50 |

♂ and ♀.—Antennæ black, with a hoary reflection, densely pubescent, rather thicker in the ♀; in the ♂ the length of the head, longer in the ♀. Entire head, eyes, and palpi black. Thorax black, sub-nitidous, densely covered with a very short black pubescence; pleuræ, scutellum and metathorax black. Halteres black. Abdomen black, sub-nitidous, densely clothed with very short black hairs. Coxæ, femora and tibiæ black, the genua yellowish. Tarsi ochraceous-brown. The coxæ and femora more dilated, and the latter shorter than the intermediate and hind pairs. Wings somewhat longer than the body, a little more than twice as long as wide, less in the ♂ than the ♀, hyaline, with brilliant opaline reflections; costal, first and second longitudinal, and marginal cross-vein yellowish-brown, the rest very pale and indistinct. First longitudinal vein joining the costa at a point rather more than one-half the distance from the base to the tip of the second longitudinal vein; marginal cross-vein extremely small; costal vein extending almost imperceptibly beyond the tip of the second longitudinal, reaching the middle of the anterior border, and a little before the tip of the fourth longitudinal vein; base of the fork of the third longitudinal situated about the middle of the wing, the anterior branch without the short transverse wing-fold appearing in *S. longipennis*; fourth longitudinal not reaching the wing border; wing-fold between the third and fourth longitudinal veins forked; fifth longitudinal complete, reaching the posterior border opposite the tip of the first longitudinal vein.

Hab.—Apparently generally distributed in N.S.Wales (Masters and Skuse). Throughout the year; very abundant in September and October.

Obs.—In the spring months it is scarcely possible to find a window without one or two specimens, while I have frequently

seen hundreds swarming on the inside of shop windows in Sydney. One specimen taken by me on May 9th, after being subjected to chloroform and gummed on card, deposited in a quarter of an hour about 250 eggs, almost in one continuous string. The eggs are white, shining, translucent, more than twice as long as wide, rather larger at one end, 0.007 long \times 0.003 mm. wide.

EXPLANATION OF PLATE.

PLATE XXXIX.

- Fig. 1. Wing of *Simulium furiosum*, 1a palpus, 1b antenna.
Fig. 2. „ *Bibio imitator* (♂).
Fig. 3. „ *Plecia amplipennis* (♀).
Fig. 4. „ „ *ornaticornis* (♂).
Fig. 5. „ „ *erebea* (♂).
Fig. 6. „ „ *dimidiata* (♂).
Fig. 7. „ *Dilophus longirostris*, (♀).
Fig. 8. „ „ *pictipes* (♂).
Fig. 9. „ *Scatopse longipennis* (♀).
Fig. 10. „ „ *fenestralis* (♀).

FURTHER NOTES ON AUSTRALIAN COLEOPTERA,
WITH DESCRIPTIONS OF NEW GENERA AND
SPECIES.

BY THE REV. T. BLACKBURN, B.A.

The following notes and descriptions are founded chiefly on several collections made in the Northern Territory of S. Australia; I have included, however, among them the results of the examination of various Coleoptera from other parts of Australia that have recently come into my hands :—

CARABIDÆ.

HYPHARPAX.

H. DEYROLLEI, Cast.

In a note on this species in the Trans. Roy. Soc. South Australia, 1887 (p. 190), I drew attention to the anomalous characters of this insect, which seems to be very isolated among the Australian *Harpalides*, and also expressed a doubt whether I was acquainted with the male. I have recently procured on the sea coast near Adelaide, a male example which I have no doubt is conspecific with the females previously known to me, although its elytra and undersurface are darker in colour than any of them, and its antennæ have a little more tendency to infuscation towards the apex. A study of this specimen has satisfied me that the insect is much nearer to *Hypharpax* than to any other described genus; it presents differences however that may possibly indicate generic distinction, but as the sexual characters of species already attributed to *Hypharpax* present considerable diversity, I prefer for the present to regard *H. Deyrollei*, Cast., as a somewhat aberrant

member of that genus. In the example before me the anterior tarsi are moderately dilated (scarcely less strongly than in typical *Hypharpax*), but the intermediate only very slightly; the hind femora are not toothed but they are somewhat dilated in a rounded manner at the place where the tooth is when present (it is quite likely that individuals vary in this respect); the hind tibiæ are strongly curved near the apex and their inner edge is moderately crenulate and fringed with long cilia.

CYCLOTHORAX.

C. PUNCTIPENNIS, Mcl.

This insect is extremely abundant all over South Australia; Mr. Macleay has done me the favour of confirming my identification of it. It is very close to *C. insularis*, Motsch., (of which I possess some specimens from New Zealand named by Mr. Bates), but may be distinguished from the latter by its narrower and more depressed form, and its less transverse prothorax, which, moreover, is decidedly smaller in proportion to the elytra, while the rows of punctures on the elytra can scarcely be said to run in striae. Capt. Broun in the "Manual of New Zealand Coleoptera," quotes Mr. Bates as stating that it (*C. insularis*) scarcely differs from the common Australia *Anchomenus ambiguus*, Er., the only difference observable being its more æneous colouring. I have not been able to find this statement in any of Mr. Bates' published memoirs to which I have referred, and possibly it may have been made in a private communication. Moreover, as Capt. Broun uses no inverted commas in his quotation, it seems doubtful whether he makes Mr. Bates responsible for the latter part of the statement. But not even Mr. Bates' authority (unless it were stated by himself to be founded on a comparison of the original types) could justify the statement. I have no doubt that *A. ambiguus*, Er., is a *Cyclothorax*, but Erichsen states it to be an insect with antennæ of pitchy colour the base being testaceous (whereas *C. insularis* has wholly testaceous antennæ, merely a little infusate beyond the third joint), the elytra subæneous (the absence of which character,

according to Capt. Broun's quotation of Mr. Bates, distinguishes it), the elytra half again as wide as the prothorax (which they are certainly not in *C. insularis*), and the systematic punctures on the elytral interstices placed quite differently (and very peculiarly) from those of *C. insularis*. But a further question arises whether *A. ambiguus*, Er., is the same insect as *C. punctipennis*, MacL., and this is not so easily answered. The only tangible differences seem to be that the antennæ are differently coloured, and the systematic punctures of the elytra differently placed. In *A. ambiguus* the position of the latter is described as so peculiar that it might well suggest the idea of abnormality. But the dark antennæ of *A. ambiguus* in a genus represented by many closely allied species, inclines me to the opinion that the identity of Mr. Macleay's species with Erichsen's wants confirmation, and I think that Mr. Masters has done wisely in retaining the two names,—for the present at any rate. The descriptions of the following new species of *Cyclothorax*, all from South Australia, points to the probability that *Cyclothorax* is largely represented on the continent.

C. OBSOLETUS, sp. nov.

Sat convexus; niger; antennis, palpis, pedibusque rufis; prothorace fortiter transverso, trans basin fortiter punctulato, lateribus rotundatis, angulis posticis subrotundatis minute subdentiformibus; elytrorum disco antice subtiliter quinquies punctulato. substriatis, striâ quintâ parte dimidiâ posticali oblitteratâ.

[Long. $2\frac{1}{2}$, lat. 1 line.

The head, antennæ, and palpi do not differ noticeably from those of *C. punctipennis*, Mcl. The prothorax is not much narrower than the elytra, and is nearly half again as wide as it is long down the middle, its base and front margin nearly equal, its sides very strongly rounded, the median line faint and abbreviated at both ends, the hind angles extremely obtuse but with a faint indication of being dentiform, the depressed basal area strongly, but not closely, punctured all across, a curved row of strong punctures running transversely a little behind the front margin.

Each elytron bears five rows of fine punctures placed in scarcely impressed striæ; of these the 1st stria is fairly well-defined and reaches the apex, but becomes impunctate in its apical half, the second is scarcely traceable to the apex, but its puncturation extends a little further back than that of the 1st, the next two resemble the 2nd, but their puncturation is a little more abbreviated, the 5th is scarcely defined or punctulate so far as to the middle of the elytron; under a Coddington lens a few punctures representing a 6th row are barely discernible; there is a strongly impressed stria a little before the margin bearing some strong punctures in its anterior half and about five large foveæ placed at equal distances apart in its posterior third; the marginal stria is punctured in its anterior third part. The colour varies somewhat, having a coppery tone in some examples with the middle part of the hind body and the prosternum inclining to red, and in some having the extreme lateral margins of the prothorax reddish.

A broader and more convex species than *C. punctipennis*, Mcl., with the prothorax much wider and more massive, the puncturation of the elytra evidently finer, and only five (instead of six) distinct rows of punctures on the same. From *C. ambiguus*, Er., it is distinguished by the colour of its antennæ, the much greater breadth of its prothorax, the two interstitial punctures of the elytra being both on the 3rd interstice, and probably by details of puncturation, but these latter are not indicated in Erichsen's description.

Port Lincoln.

C. FORTIS, sp.nov.

Convexus; ferrugineus vel piceo-ferrugineus; prothorace fortiter transverso, trans basin crasse punctulato, lateribus rotundatis postice rectis, angulis posticis acute rectis; elytris leviter 6-striatis, striis fere ad apicem sat fortiter punctulatis.

[Long. $2-2\frac{1}{2}$, lat. $\frac{4}{5}$ line (vix).

The head and its organs scarcely differ from those of the preceding species except in the antennæ being shorter and feebler. The prothorax is about half as wide again as it is long down the

middle, its base evidently narrower than its front margin, its sides strongly rounded from the front nearly to the base, where they become quite straight and parallel, the median line faint and abbreviated at both ends, the hind angles sharply rectangular, the depressed basal area very coarsely (but not closely) punctured and longitudinally strigose, a strong unpunctured curved furrow running transversely a little behind the front margin. The sculpture of the elytra is very similar to that of *C. obsoletus*, except that there are six distinct (though lightly impressed) discal striæ on each, which are more strongly punctured, the punctures extending nearly to the apex except in the 6th stria in which they cease (or at least become very obscure) a little behind the middle, and that a 7th stria is faintly traceable like the 6th in *C. obsoletus*.

A considerably shorter insect than *C. punctipennis* and *obsoletus*, more strongly convex than either, and with the sides more rounded, the antennæ feebler and the thorax quite differently shaped. There is a slightly noticeable development of the apical external spine of the anterior tibiæ.

Near Port Lincoln ; also on Yorke's Peninsula.

C. CINCTIPENNIS, sp. nov.

Convexus ; piceo-rufescens ; elytris piceis, marginibus lateralibus (late) et suturâ postice (anguste) testaceis ; antennis palpis pedibusque testaceis ; prothorace fortiter transverso, trans basin sat fortiter punctulato, lateribus rotundatis, angulis posticis subrotundatis minute subdentiformibus ; elytrorum disco antice fortius 5 punctulato-substriatis, tibiis anticis apice externa sat fortiter dilatatis. [Long. $2\frac{1}{2}$, lat. $1\frac{1}{8}$ lines.

A very robust species, more convex than *C. obsoletus*, with the anterior angles of the elytra considerably more prominent and the sides much more decidedly rounded ; there is very little difference in the head and prothorax except that the latter is somewhat wider in front, and the sculpture of the elytra scarcely differs except in that the punctures in the striæ are larger and stronger, are placed at wider intervals in the rows and scarcely exist behind the front half of the elytra. The evident sub-dentiform external prominence

at the apex of the front tibiæ might almost suggest generic distinction were it not that a similar character is feebly displayed in *C. fortis*, which seems to be quite a typical *Cyclothorax* otherwise.

A single example in flood refuse on the banks of the Torrens.

C. PERYPHOIDES, sp. nov.

Minus convexus; niger; antennis palpisque rufescentibus; pedibus in parte ferrugineis; prothorace vix transverso, trans basin punctulato haud depresso, lateribus rotundatis postice rectis, angulis posticis acute obtusis; elytris vix striatis, 6-seriatim punctulatis, puncturis postice oblitteratis. [Long. 2 $\frac{3}{4}$, lat. 1 line.

The head is somewhat narrower and more elongate than that of *C. obsoletus*, the antennæ and palpi as in that species. The prothorax is not much more than half as wide as the elytra, its length and width nearly equal, its base and front margin of nearly equal width, the sides very strongly rounded but becoming straight just before the base where it is sharply angled, but the sides of the base being somewhat oblique the angles are slightly obtuse; the median line is fairly marked but much abbreviated at both ends; the basal area is not depressed (as it is in all the preceding) but is similarly punctured, the punctures being considerably larger and more lightly impressed than in *C. obsoletus*; a strong unpunctured furrow runs transversely in a curve a little behind the front margin. On the elytra, the sutural stria is well-marked and attains the apex and is punctured in its anterior half; it can scarcely be said that there are any more striæ, but outside the sutural one there are five rows of punctures very similar to those of *C. cinctipennis*, and near the lateral margin the sculpture scarcely differs from the same in *C. obsoletus*; the apical third part of the disc is perfectly lævigata; as in all the preceding species of *Cyclothorax*, the abbreviated scutellar stria is indicated by a short row of punctures between the suture and the sutural stria. In my example the legs are black, except the following parts which are reddish—the anterior and intermediate coxæ and the underside of the corresponding femora, the extreme base of the hind femora and of all the tibiæ, and all the trochanters and tarsi.

In general appearance very much like a *Peryphus*. Differs from all the species of *Cyclothorax* described above in having the punctured basal area of the prothorax on the general level of the segment instead of being depressed.

Woodville, near Adelaide; a single specimen.

DYTISCIDÆ.

CYBISTER.

C. GRANULATUS, Blackb.

Since the publication of my description of this insect I have seen a short series of both sexes. The peculiar sculpture of the elytra (which suggested the name) does not appear to be sexual, being quite as strong in the male as in the female, but it varies in both sexes,—some specimens showing it only feebly,—but it is always traceable. In the male the anterior tarsi are strongly transverse, the basal three joints together being considerably shorter than their width; there is very little sexual pubescence on the intermediate tarsi, and the claws are rather strongly unequal.

LAMELLICORNES.

BOLBOCERAS.

B. SLOANEI, sp.nov.

Castaneum; nitidum; prothorace latera versus creberrime subtiliter rugulose, postice utrinque prope medium crebre crasse rugulose, in medio duplo (sparsius subtilissime et sparsim sublineatim crasse), punctulato; elytris punctulato-striatis; striis suturam versus leviter, marginem lateralem versus fortiter, impressis; pygidio crebre subtilius punctulato, dense hirsuto; tibiis anticis externe 6-dentatis, dente basali parvo.

[Long. 10-11, lat. $6\frac{1}{2}$ -7 lines.

Maris capite cornu perlongo leviter recurvo (exemplo typico prothoraci longitudine fere æquali) instructo; prothorace in medio fere ad basin late retuso; parte retusa pernitida sparsim subtilissime punctulata, utrinque in medio cornuta, postice curvatim antice rotundatim utrinque profunde excavata.

Feminae capite bituberculato; prothorace antice ad medium retuso, parte retusa (antice exceptâ) elevato-marginata.

The transverse carina at the base of the frontal horn of the male in front (*i.e.* the clypeal suture) is angulated in the middle, the horn itself being closely and rather finely rugose and simply (but not sharply) pointed at the apex and thinly clothed in its lower half with long fine hairs. The prothorax of the male is difficult to describe owing to the complexity of its sculpture; the lateral declivity (on either side) is very closely and rugosely punctured, finely in its lateral half, very coarsely in its middle half; this system of puncturation is continued narrowly and obscurely across the base and renders the portion of the surface where it prevails somewhat opaque; the whole of the remainder of the segment is extremely nitid, bears a system of very fine and very sparse puncturation, and forms (regarded as a whole) a great declivity, the surface of which is uneven in the following manner; its middle part (which is sulcate from the base half-way to the apex and bears a few large punctures) does not begin to be declivous close to the base, but runs forward a little distance as a flattened ridge on either side of which the declivity commences almost from the base itself, but in such fashion that its hinder edge here forms a curve on either side nearly touching the base in its middle, on its inner side margining the central non-declivous ridge (already mentioned), and externally forming a limit of the outside rugosely punctate surface, and then forming the hinder outline of a strong compressed horn which rises (on either side of the central declivity) about half-way between the base and apex of the prothorax, its height above the surface being about one-third that of the frontal horn; in front of each of the prothoracic horns the surface of the nitid declivity is disturbed (and its area extended laterally) by a deep round impression; the width of the space between the horns is considerably wider than the distance between the external base of either horn and the margin of the prothorax; the horns are inclined forward and upward.

In the female the clypeus is strongly declivous its hinder edge forming a strong carina (most elevated in the middle);—from each

end of the middle highly elevated part a strong carina runs obliquely towards the eye rising into a kind of tubercle at its apex where it is met by another carina given off from the extreme end of the carina that forms the hind margin of the clypeus; the back part of the head is elevated in a bifid tubercle. The prothorax is strongly declivous in its anterior part, the margin of the hinder part of the declivous space being prominent and conspicuous.

Mulwala, N.S. Wales; taken by Mr. Sloane, who has generously presented me with specimens of this and other interesting novelties.

B. CHELYUM, sp.nov.

Colore variabile, piceum vel piceo-ferrugineum (nonnullis exemplis elytris scutelloque læte ferrugineis); prothorace postice, ad latera crasse rugulose, in medio subtiliter, punctulato; post medium carina forti transversa (marginem lateralem haud attingente) instructo; scutello confertim subtilius punctulato; elytris sat fortiter punctulato-striatis; pygidio crebre fortius punctulato, dense hirsuto; tibiis anticis externe 7-dentatis, dente basali minuto vel obsoleto.

[Long. $7-7\frac{1}{2}$, lat. $4-4\frac{1}{4}$ lines.

Maris fronte antice cornu conico brevi (exemplo typico clypeo longitudine æquali) antice paulo inclinato, postice utrinque tuberculis acutis binis instructa; prothorace antice subperpendiculari, nitido, profunde sat anguste longitudinaliter excavato, excavationis lateribus utrinque in cornu acuto, capite vix breviori, productis.

Feminæ fronte antice bituberculata, postice tuberculis 6 transversim positis instructa; prothorace antice subperpendiculari, sat nitido, longitudinaliter leviter excavato, excavationis lateribus utrinque tuberculo conico instructis.

The long head horizontally projecting from the bottom of the almost perpendicular front face of the prothorax is very tortoise-like. The surface of the excavated part of the prothorax is almost lævigata in the male; in the female it is punctured rather more strongly but much more sparingly than the middle part of the disc behind the transverse carina, its puncturation consisting of large

and small punctures intermingled. The prothoracic horns in the male spring from the sides of the excavation a little below the middle of their length and are directed almost straight forward.

This species resembles *B. laticorne*, MacI. The male may be distinguished *inter alia* by the single horn in the middle of the front of its head, the narrower and deeper excavation of its prothorax, and the much longer prothoracic horns which are pointed at the apex; the female differs in its clypeus less perpendicular, in the row of 6 tubercles (of which the point of the ocular canthus forms the external one on either side) being placed much more nearly in a transverse line, and in the declivous front part of the prothorax being more perpendicular and more sharply defined.

Mulwala, N.S. Wales; taken by Mr. Sloane.

MÆCHIDIUS.

M. SINUATICEPS, sp. nov.

Nigro-piceus; minus nitidus; minus convexus; sat parallelus; capite antice leviter bisinuato, lateribus obliquis fortiter bisinuatis; prothorace fortiter transverso crebre rugulose punctulato, transversim rugato, lateribus crenulatis sat fortiter arcuatis angulis omnibus acutis; elytris punctulato-striatis, interstitiis alternis leviter convexus; unguibus simplicibus.

[Long. $5\frac{1}{2}$ (vix), lat. $2\frac{3}{8}$ lines.

The peculiar shape of the head seems to distinguish this insect from all others of the genus. The front margin is widely and very gently emarginate, but the emargination is distinctly (though gently) bisinuate. The sides of the clypeus are strongly bisinuate but in such fashion (their obliquity in front being comparatively slight) that the appearance of the clypeus bears a rough resemblance to that of a female *Liparetrus* of Mr. Macleay's first section (e. g. *L. phœnicopterus*, Germ.). The prothorax is not quite twice as wide as it is long down the middle; its sides are gently arched to behind the middle (where the segment is at its widest) and thence nearly straight (not at all sinuate) to the base; the front angles are decidedly, the hind very strongly, acute; the front

margin is strongly emarginate, the base strongly bisinuate. Compared with the common *M. sordidus*, Boisd., the puncturation of the head is closer and not so strong, and that of the prothorax much better defined and running in transverse or oblique series so that the intervals appear as a system of transverse and oblique wrinkles. The sculpture of the elytra bears much resemblance to the same in *M. sordidus*. The setæ over the whole surface (at all events in the specimen before me) are not at all conspicuous. The anterior tibiæ bear three rather large very blunt external teeth. The underside is shining and coarsely and deeply punctured.

Northern Territory of South Australia.

LIPARETRUS.

L. LATICULUS, sp. nov.

Ovatus; nitidus; niger, antennis palpis pedibus et elytris (in parte) testaceis, pygidio rufescenti; clypeo antice truncato-lateribus obliquis; capite crebre rugulose, prothorace sparsim fortiter, elytris minus fortiter lineatim, propygidio (hoc per, magno) subtilius sat crebre, pygidio crebre fortiter, punctulatis; tibiis anticis externe bidentatis, antice in longo processu curvato productis; tarsorum posticorum articulo primo secundo duplo longiore; antennis 9-articulatis. [Long. $1\frac{3}{4}$ lines.

An extremely distinct species not falling very naturally into any of Mr. Macleay's sections of the genus. Its clypeus bears much resemblance to that of *L. basalis* and its allies, but it has 9-jointed antennæ. The elytra are short scarcely reaching half-way from the base of the prothorax to the apex of the pygidium; they have no trace of geminate striæ and their sculpture consists of nearly regular rows of punctures; the testaceous colour occupies the whole surface except the base suture and lateral margins. The propygidium (in one sex at any rate) is enormous. The head, prothorax (except on the lateral margins) and elytra are glabrous, the propygidium, pygidium and underside sparingly furnished with rather short hairs. The two external teeth on the anterior tibiæ are small (the upper smallest) and sharp, the apical part of the

limb being produced almost in a spine curved outwards at the apex. Probably the other sex has the anterior tibiæ differently toothed, the elytra longer, and perhaps the pygidium and propygidium differently punctured.

A single specimen, sent by Mr. Rothe of Sedan.

L. SUAVIS, sp.nov.

Ovatus; minus nitidus; hirsutus; niger; pedibus et antennis in parte, palpis et elytris omnino, testaceis; clypeo antice subtruncato; capite crebre rugulose, prothorace vix evidenter, elytris crasse leviter, pygidio fortiter sat crebre, punctulatis; propygidio granulato; tibiis anticis (? alterutrius sexus solum) externe fortiter bidentatis; tarsis posticis gracillimis, articulo primo secundo vix longiori; antennis 9-articulatis. [Long. $2\frac{3}{4}$ lines.

This species belongs to the same sub-section of the genus as *L. discipennis*, Guér., differing however from nearly all the other members thereof in having the elytra entirely testaceous with (at the most) a little infuscation round the scutellum. The head behind the clypeus is quite evenly convex; the anterior tibiæ are strongly bidentate externally; the hind tarsi are extremely short and slender, their basal two joints equal to each other in length. In other respects resembling *L. discipennis*.

Murray Bridge, &c.; in my collection, and in the South Australian Museum.

L. MYSTICUS, sp.nov.

Ovatus; nitidus; supra glaber, subtus sparsim breviter pilosus; ferrugineus capite (clypeo excepto) infuscato; clypeo antice rotundato-truncato vix emarginato, capite crebre subrugulose sat crasse, prothorace (huic lateribus ampliato-rotundatis) leviter sat crasse minus crebre, elytris sparsius irregulariter (striis geminatis nihilominus sat regulariter), pygidio propygidioque crebrius sat fortiter, punctulatis; tibiis anticis (? alterutrius sexus solum) externe 3-dentatis, dente primo minuto; tarsis posticis gracilibus, articulo primo secundo parum longiori; antennis 7-articulatis. [Long. $2\frac{1}{2}$ lines.

This insect has entirely the facies of an ordinary *Liparetrus*, but presents some structural peculiarities which might almost warrant the bestowal on it of a new generic name. Its antennæ having only seven joints will distinguish it specifically from all its hitherto described congeners, but the number of joints in the antennæ cannot be considered a generic character in the Australian *Heteronyxidæ*; the form of the anterior tibiæ (with the apical two external teeth very large and sharp, and a very small one above) and the very slight pilosity, are also exceptional. The distance from the apex of the elytra is very little less to the apex of the pygidium than to the base of the prothorax, so that a large piece of the propygidium is exposed, which (as also the pygidium) has no trace of a keel. The geminate striæ of the elytra are fairly well-defined; the puncturation of the interstices similar to that in the geminate striæ, but not quite evenly dispersed. The prothorax is slightly more than twice as wide as its length down the middle, its base very little wider than its front, its sides very strongly and suddenly dilated and rounded in the middle, its hind angles quite rounded off, its disc distinctly channelled.

Taken by Mr. J. G. O. Tepper, at Monarto.

COLYMBOMORPHA.

There does not appear to me to be any sufficient reason for rejecting this name (as Mr. Masters has done in his Cat.). The structure of the claws and of the mesosternal process is very different from the same in *Calonota*. I can now add the information that the sexual characters are quite distinctive; I received, some time ago, a short series collected in Western Australia by E. Meyrick, Esq., in which I find a single male (unknown to previous writers so far as I can ascertain). It has the antennal club very much longer than that of the female, and five-jointed.

DASYGNATHUS.

The species of this genus are very similar in appearance *inter se*, and unfortunately their published descriptions are not particularly

good, in no case I think instituting a comparison between one species and another. *D. Couloni*, Burm., ought certainly to be removed from the genus, and I propose for it the generic name *ADORYPHORUS*. As I possess but a single example I am not in a position, by dissection, to expose the generic characters fully, but the character mentioned by Drs. Lacordaire and Burmeister,—the atrophy of the upper lobe of the maxilla—together with its small size and peculiar facies, render it an obvious error to continue calling it a *Dasygnathus*.

According to all the hitherto published descriptions of the genus the upper lobe of the maxillæ is devoid of teeth. I have recently dissected a considerable number of specimens appertaining to it and find that very few of them have this lobe toothless.

Up to the present time three Australian species that appear to be rightly placed in *Dasygnathus* have been described, viz., *D. Dejeani* ♀, W. S. Macleay, *Australis* ♀, Boisd., *Mastersi*, (♂ & ♀) MacI. The original type of the first of these is in the collection of the Hon. W. Macleay, alongside which (Mr. Macleay tells me) is a male *Dasygnathus* placed there (I understand) by the original describer. Mr. Macleay has furnished me with a careful description of both these specimens and has given me a male which he has compared with the male just mentioned and found to be identical; he has also favoured me with a detailed description of a male and female *Dasygnathus* in the cabinet of Mr. W. S. Macleay labelled *D. Australis*. With these materials before me, and also an assemblage of specimens of the genus from various collections, I have prepared the following notes and descriptions of new species.

The specimens standing in Mr. Macleay's collection as *Dejeani* and *Australis* must be regarded as representing those species correctly. The following descriptions of them are compiled (except that of ♂ *Dejeani* and ♀ *Australis*) from Mr. Macleay's notes.

DASYGNATHUS DEJEANI, W. S. MacI.

♂. Blackish-pitchy, shining; the underside of a somewhat ferruginous tone and rather densely clothed with longish ferruginous

hairs except on the ventral segments where these hairs are concentrated in transverse lines (2 each on the basal 2 segments, 1 each on the rest); form very robust and gradually dilating almost uniformly from the front to near the apex of the elytra; clypeus (with a very strong nearly erect reflexed margin) much narrowed from base to apex, the front angles quite rounded off, the outline of the sides and front gently convex. The forehead bears a very stout recurved horn which is rather strongly punctulate to near the apex; the head behind the horn is impunctate or nearly so. The prothorax is just half again as wide as it is long down the middle, and its base is just twice the width of its front; the anterior angles are well-produced but rounded at the apex, the hind angles obtuse, the sides gently arched and not at all sinuate behind the middle; the anterior retuse portion extends backward to about the middle of the segment, and nearly reaches the rugose lateral fovea on either side, its hinder margin being strongly bi-tuberculate (the two tubercles rather near to each other), and its surface very nitid and punctured on the sides uniformly with the rest of the prothorax, on the middle space more closely and confusedly (especially in front where the sculpture is close and rugose); the rugose fovea on either side short (not much longer than wide); the furrow within the lateral margin is rugose, wide and deep; that within the anterior margin is very obscure in the middle and runs nearly parallel to the anterior edge so that the space in front of it is not much wider towards the middle than close to its ends; the prothorax is not margined along its base which is broadly but not deeply lobed in the middle with a foveate emargination on either side. The elytra are at their widest considerably behind the middle where their combined width is quite $\frac{2}{3}$ of their length down the suture; they are a little more than twice as long, and (together) about a quarter again as wide, as the prothorax; each of them bears on the disc six well-defined punctulate striae, of which the first (close to the suture) attains the apex, the 2nd fails in the apical fifth part, the rest are obsolete in about the apical third part; the interstices among these *striae* are gently convex and are impunctate except the front part of the interstices between the

1st and second and between the 5th and 6th where there is more or less puncturation ; the space outside and behind the punctulate striate area is rather finely and confusedly punctulate, and there are two fairly defined punctulate striæ immediately before the lateral margin. The pygidium is densely punctulate and clothed with long erect hairs at the base and sides while the hind part of its middle space is glabrous and much more sparsely punctulate. The anterior tibiæ are strongly and sharply tridentate on their external margin. The mentum is extremely rugulose, longitudinally concave behind and without lateral tubercles.

[Long. 11, lat. 6 lines.

The female (Mr. Macleay writes) has the head rugosely punctulate, narrowed a little in front of the eyes, recurved at the apex, with the anterior angles rounded ; the thorax wider than long, convex, apex moderately emarginate with a marginal fold which thickens into a small triangular extension in the middle on the median line, the sides rounded and more broadly margined than the apex with strong punctures in the marginal groove, the apical angles slightly advanced, obtuse, the posterior somewhat rounded, the base rather wider than the apex, broadly but not deeply lobed in the middle with a foveate emargination on each side of it, the surface smooth and very minutely and thinly punctate ; scutellum semi-circular, a little depressed and punctate on the base ; elytra scarcely wider than the thorax and nearly twice the length, almost truncate at the base, scarcely widened behind and broadly rounded at the apex.

The remainder of the description is similar to what I have written above concerning the male. [Long. 10½, lat. 5 lines.

D. AUSTRALIS, Boisd.

♂. Head nearly smooth, the clypeus somewhat squarely recurved, the frontal horn large and grooved in front ;* the

* The groove on the front of the horn is not a reliable specific character : I find it present in some, and absent in other examples of the same species. T.B.

excavation in front of the thorax smaller and more circumscribed than in *Dejeani*, rugosely and finely punctate along its median line, and surmounted by a transverse ridge which scarcely shows any protuberances; the rugose furrow near the side deeply marked and quite one-third the length of the thorax; the scutellum transverse, depressed, and punctate in the middle; the sculpture of the elytra much as usual in the genus, but certainly smoother and more distinctly striate than in the female, and more rugose at the apex; the pygidium less pointed and more finely punctate than in the female, and not hirsute.*

[Long. 13, lat. 7 lines.

The following is a description of the female taken from a specimen in my own collection:—

Reddish-pitchy, the head and prothorax darker, the underside clothed as in *D. Dejeani*; form extremely robust, moderately dilated hindward; clypeus broadly rounded with a strong nearly erect reflexed margin; the head evenly and rather closely rugulose, with the clypeal suture very little indicated except at its middle, which is marked by a small well-defined tubercle. The prothorax is $\frac{2}{3}$ again as wide as its length down the middle, and its base is decidedly more than twice as wide as its front; the anterior angles are rather strongly produced and somewhat sharp, the hind angles quite rounded off, the sides diverging somewhat straightly from the front to near the middle, and then gently arched (without any sinuation) to the base, which is rather strongly lobed in the middle, is finely margined except in its middle half, and has an obscure foveate emargination on either side; its surface is finely and thinly (most finely and thinly in the middle of the disc) punctulate; the furrow within the lateral margins deep, wide, and rugose, that within the front margin fine and nearly parallel with the front almost to the middle where it is suddenly produced backward, so that the space in front of it appears as a narrow strip abruptly and triangularly produced backward at its middle (the apex of the triangular process being

* I suspect this absence of hairs may be due to abrasion. T.B.

distant from the front of the prothorax nearly as far as the length of the antennal club); there is a slight longitudinal concavity in which the puncturation of the surface is at its strongest occupying the extreme front of the disc, a small slight indication (on either side) of what in the male is the lateral fovea, and an oblique impressed line on either side a little within the posterior angle (this latter is possibly an individual aberration). The elytra together are very nearly as wide as their length down the suture, and are (behind the middle) a quarter again as wide as, but in length not quite twice, the prothorax; their sculpture is very much as in *D. Dejeani*, but the second, third, fourth, and fifth striæ show a tendency to run in pairs. The pygidium is much like that of *D. Dejeani*, but a little more pointed at the apex. The external margin of the anterior tibiæ is cut into three very blunt teeth.

N.B.—Mr. Macleay informs me that the ticket on his *D. Australis* ♂ gives "*Scarabæus Juba*, Kirby," as a synonym, but I hardly think it can be so. The only known Australian genus presenting the cephalic and prothoracic characters ascribed to *S. Juba* is *Corynophyllus* (*C. melas*, Fairm., agrees very well in these respects); but the known species are much too small, and it is improbable that Kirby could have omitted reference to the antennæ if his insect had been a *Corynophyllus*. *S. Juba* should be, I think, omitted from the Australian catalogue; or, better still, relegated to an appendix.

D. TRITUBERCULATUS, sp. nov.

Robustus, postice dilatatus; nitidus; brunneo-piceus, capite prothoraceque obscurioribus; subtus fulvo-hirsutus; clypeo antice truncato vel obsolete emarginato, angulis rotundato-obtusis, margine reflexo minus erecto; capite postice prothoraceque sparsim subtiliter punctulatis; hoc leviter transverso, basi (lobo mediano excepto) evidenter marginato; scutello fortiter transverso postice obtuso; elytris punctulato-striatis, latera apicemque versus confuse punctulatis, striis postice et ad latera obsoletis.

[Long. 12-12½, lat. 7 lines (vix).

Maris fronte cornu valido recurvo punctulato instructa ; prothorace antice excavatione sat parva (hac postice trituberculata, tuberculo intermedio minuto) instructo. Segmento apicali ventrali ut *D. majoris*.

Feminæ clypeo postice laminatim triangulariter producto, parte producta super frontem inclinata ; segmento apicali ventrali utrinque punctis setiferis nonnullis instructo.

The prothorax is a quarter again as wide as long down the middle, and evidently (but not much) less than twice as wide at the base as in front. The male differs from that of *D. Dejeani* as follows : the head is larger, the clypeus broader in front and truncate, or even very slightly emarginate all across, with its angles, though obtuse, not rounded off, and its sides slightly concave in outline, its reflexed margin not quite so erect. The prothorax is less emarginate in front, and is much less transverse, the furrow within the anterior margin considerably further back and very much stronger leaving a wide space in front of it, the anterior concavity very much smaller, not reaching back half-way to the base, and occupying (transversely) much less than the middle third of the segment, its concave surface almost impunctate except close to the front margin where it is only thinly punctulate and not at all rugose ; the prominent hind margin of the concavity is proportionally wider than in *Dejeani*, and has a small tubercle in the middle ; the hind margin of the prothorax is rather strongly margined except in the middle. The sculpture of the elytra is on the same plan, but is altogether feebler and less defined.

In the female the clypeus resembles that of the male in its shape anteriorly, but its surface is closely rugose, and its hind margin consists of two lines running obliquely backward and meeting in the centre in an obtuse angle, the hinder part presenting the appearance of a triangular lamina laid back (not quite flatly) on the surface of the head, the apex of the triangle being the part least closely applied to the head. On the prothorax the furrow within the anterior margin is as in the male except that it is

continuous all across and in the middle is strongly and angularly produced backward in such fashion that the strip in front of it is narrow close to the anterior angles and dilates gradually towards the middle, but at the middle is suddenly and triangularly produced backward, till the apex of the triangle reaches back to a fifth of the length of the prothorax; there is a small punctulate fovea near the lateral margin on either side about half-way between the base and apex. The elytra resemble those of the male except that the sculpture is altogether stronger.

The anterior tibiæ are strongly and sharply tridentate on their external edge as in the male.

The mentum in both sexes is very rugose and hirsute, and strongly sulcate down the middle nearly to the front; in the male it is moderately tuberculate on either side. The upper lobe of the maxillæ is strongly dentate.

I have seen specimens from both N. S. Wales and Victoria.

D. MAJOR, sp. nov.

♂. Supra piceo-niger subtus fuscus fulvo-hirtus; sat nitidus; clypeo antice reflexo truncato, margine minus erecto; fronte cornu valido fortiter recurvo instructo; prothorace leviter transverso, (parte dimidia antica retusa postice fortiter bituberculata in medio longitudinaliter carinata, parte postica valde elevato-convexa supra depressa), inter partem retusam et marginem lateralem fovea profunda rugosa longitudinali instructo, mox intra marginem sulcato rugoso, sparsissime tenuissime punctulato, margine antico flavo-ciliato fortiter trisinuato; antice post marginem utrinque profunde sinuatim sulcato, margine basali integro; elytris sat fortiter punctulato-striatis, postice vix dilatatis, interstitiis nonnullis punctulatis; pygidio crebre (apicem versus minus crebre) subtiliter punctulatis; tibiis anticis obtuse tridentatis; segmento ventrali apicali apice fortiter arcuatim emarginato; mento utrinque fortiter tuberculato.

[Long. $13\frac{1}{2}$ -15, lat. $7\frac{1}{2}$ -8 lines.

♀. (? huj. spec.). Clypeo antice angustato minus reflexo rotundato-truncato, sutura clypeali carinata, in medio in tuberculo postice

inclinato elevata; prothorace haud impresso, margine basali in medio interrupto, margine anteriori late (in medio triangulariter) dilatato, prope angulos anticos fovea rotundata instructo; tibiis anticis obtusissime bidentatis; segmento ventrali apicali haud emarginato, sparsim punctulato, punctis breviter setiferis.

[Long. $13\frac{1}{2}$, lat. 7 lines (vix).

The horn of the male is very stout and strongly recurved, equal in length (on its front face) to the distance from the base of the prothoracic excavation to the front of the prothorax. The prothorax is about a quarter again as wide as long and somewhat less than twice as wide at its base as in front; its sides diverge very strongly for a short distance from the front and then are evenly and slightly arched to the base, the segment thus having a very quadrate appearance. On the elytra, the sutural stria reaches the apex; then comes a space bearing some strong punctures, irregularly placed, in front; then two punctured striæ nearly reaching the apex followed by another two much abbreviated; the interstices among all four punctureless or nearly so; between these striæ and the margin the elytra are scarcely striated but are finely punctulate, the punctures tending to run in rows, especially near the margin. The sinuous fovea on either side behind the front margin of the prothorax appears to be a narrowed and deepened continuation of the strong furrow that runs close within the lateral margin; it tends gradually away from the front margin and ceases abruptly about half-way to the central line of the prothorax. The carina running along the centre of the retuse part of the prothorax is feeble in front but becomes stronger behind, its hind apex being raised almost like a third tubercle. The large smooth round tubercle on either side of the mentum is a striking character. The superior lobe of the maxillæ has a strong tooth at the apex, and 3 or 4 smaller ones below.

The female which I have doubtfully connected with *D. major*, resembles it in its massive, yet moderately elongate form, scarcely dilated behind,—and in the sculpture of its elytra,—but the prothorax is less quadrate, and the front tibiæ furnished externally with only two (and those almost shapeless) teeth are very puzzling.

The sinuous fovea on the front of the prothorax is very similar to that of the male, but is continuous to the centre line where it is rather sharply angulated, the part in front of the furrow resembling in form a hood turned back quite across the front of the prothorax, extending back half a line in the middle, its centre part but little triangularly produced. There are no smooth tubercles on the mentum, but it is strongly convex with its posterior two-thirds deeply and widely sulcate in the middle. The male was sent to me by Mr. Sloane, and was taken near Melbourne. The female is, I believe, from N. S. Wales. Occurs also near Adelaide.

N.B.—A ♂ specimen ($13\frac{1}{2}$ lines) in the South Australian Museum, which I consider a variety of this insect, may possibly prove to represent a closely allied species; it has the clypeus narrower and slightly emarginate in front, and the prothorax less elevated behind with the lateral furrow continued from the sides all across the base (immediately within the margin as on the sides). It has the same elongate parallel form as my type of *D. major*.

Differs from *Dejeani* and *Australis* in the strongly dentate superior lobe of its maxillæ, and in the slightly elevated smooth linear keel that runs down the retuse portion of the prothorax in the male. The size of the prothoracic excavation varies somewhat but in all the examples I have seen it is exceptionally large. Both sexes differ from the two just named and from *trituberculatus* in their more parallel form, not dilated posteriorly; the male differs from that of *trituberculatus* by the presence of the keel on the prothoracic excavation, and the female differs from that of *Australis* by the sculpture of the head and clypeus, and by the different foveation of the prothorax.

D. RECTICORNIS, sp.nov.

Minus robustus, postice haud dilatatus; nitidus; brunneus vel rufo-brunneus, capite prothoraceque obscurioribus; subtus fulvo-hirsutus; clypeo antice truncato, angulis rotundato-obtusis, margine reflexo minus erecto; prothorace leviter transverso basi (lobo mediano excepto) evidenter marginato, sparsim subtiliter

punctulato ; scutello subelongato postice subacuminato ; elytris punctulato-striatis, latera apicemque versus confuse punctulatis, striis postice et ad latera obsoletis.

[Long. 12, lat. $6\frac{1}{4}$ lines.

Maris fronte cornu erecto sat gracili subtiliter punctulato instructa ; prothorace ut *D. trituberculati*.

Femina ut *D. trituberculati*.

Less robust in appearance than most of its congeners, and not dilated behind the middle of the elytra ; apart from this difference of form, and the totally different shape of the frontal horn in the male, I do not see any good character to distinguish this species from *D. trituberculatus*. The female before me has two round foveæ on either side of the prothorax some distance within the lateral margin—one near the front, the other behind the middle—but it is doubtful whether this can be relied on as a constant character.

The mentum of the male is smoothly tuberculate on either side, the cavity between the tubercles very deep and narrow (almost as in *D. major*) ; that of the female is very rugose and extremely deeply and widely convex almost from the apex. The superior lobe of the maxillæ is strongly dentate.

Taken by Mr. Sloane at Mulwala, N. S. Wales.

D. INERMIS, sp.nov.

♂. Sat elongatus, postice dilatatus ; rufo-piceus ; sat nitidus ; clypeo antice subelevato-emarginato ; sutura clypeali sat elevata in medio laminatim angulatim elevata ; prothorace leviter transverso, antice leviter impresso, spatio concavo postice vix bituberculato, margine antico trisinuato, ad latera mox intra marginem sulcato-rugoso, antice post marginem anticam transversim sinuato-sulcato, (sulco in medio fortiter triangulariter retroducto), utrinque latera versus longitudinaliter rugoso-foveato, basi marginato ; elytris pygidioque ut *D. majoris* sculpturatis ;

tibiis anticis externe fortiter acute tridentatis; segmento ventrali apicali apice sat fortiter arcuatim emarginato; mento leviter convexo in medio leviter concavo.

[Long. 11, lat. 6 lines (vix).

♀ latet.

The absence of a frontal horn in the male at once distinguishes this species. The clypeus is shaped as in the females of the preceding three species, having its hinder margin formed of two oblique lines meeting in the middle in a sharp angle, the whole of this hind margin being laid back (as it were) on the surface of the hinder part of the head and being a little turned up to form the clypeal suture; it is however more elevated (especially in the middle) than in any female known to me. The sulcus behind the anterior margin of the prothorax resembles that in the female of *D. affinis*, but is produced backward much more strongly in the middle, running down within the frontal impression on either side to its base (very little in front of the middle of the segment), where the two sides meet in a sharp angle. The prothorax is about a third again as wide as its length down the middle; the whole segment, however, being smaller in proportion to the elytra than in any of the preceding species.

There is a single specimen in the South Australian Museum.

D. MASTERSI, MacI.

I have not seen a specimen of this insect, which is evidently very distinct from all its described congeners through the retuse portion of the prothorax in the male having a lateral protuberance on either side.

The above species appear to be perfectly distinct and separated by reliable characters. I have specimens before me which I believe to represent several other species, but they are closely allied to one or other of the preceding, and I am not sure without examining more specimens that their distinctive characters can be relied on. I find that in *Dasygnathus*, as in many other genera

with strong sexual characters, these are liable to vary in their development. I have, in the case of each species, selected a well-developed male for description, but I have seen males of almost every one in which the characters are much enfeebled,—the tubercles on the mentum, and the size of the prothoracic excavation being particularly liable to variation. In many specimens the frontal horn is longitudinally concave on its anterior face, but this does not appear to be specific. The sculpture of the elytra is on the same plan (as described in the case of *D. Dejeani*) in all the species of *Dasygnathus* known to me, but varies in intensity so much within the limits of a single species that it would be misleading to characterise it particularly.

The following table will show the distinctive characters of the species :—

- A. Sides of the prothoracic excavation in the male devoid of lateral protuberances.
- B. Elytra conspicuously dilated to considerably behind the middle.
- C. Male with a recurved frontal horn.
- D. The prothoracic excavation more or less bituberculate behind.
- E. The prothoracic excavation rugosely and finely punctulate down the middle line (female with an anterior prothoracic impression) *Australis*.
- EE. The prothoracic excavation with the median line unmarked.... *Dejeani*.
- DD. The prothoracic excavation trituberculate behind..... *trituberculatus*.
- CC. Male devoid of a frontal horn..... *inermis*.
- BB. Elytra not dilated behind the middle...
 - C. Frontal horn of male recurved *major*.
 - CC. Frontal horn erect..... *recticornis*.
- AA. Sides of the prothoracic excavation in the male with lateral protuberances *Mastersi*.

ADORYPHORUS, gen.nov.

Mentum sat angustum, convexum, antice æqualiter angustatum, ligula vix distincta; palpi labiales sub mente inserti, articulo ultimo ovali; maxilla lobo superiore minuto cylindrico, apice penicillato; mandibulæ haud dentatæ; antennæ 10-articulatæ, flabello parvo; tibiæ ut *Dasygnathi* formatæ; tarsi posteriores modicæ, articulo primo sat elongato apice vix dilatato; feminæ caput prothoraxque simplicia, hoc post marginem anticum ut *Dasygnathi* feminei (sed obsolete) sculpturato.

I propose this generic name for a small *Dynastid* which I have no doubt is identical with *Dasygnathus Couloni*, Burm., a species that certainly ought not to be associated with *Dasygnathus Dejeani*, W. S. Macleay. Unfortunately my specimen, like Dr. Burmeister's, is a female. I do not like founding a new genus without knowledge of the male, but as this insect has been described, and cannot, whatever its male may be, find a natural place in any hitherto characterised genus, I think I am taking the best course practicable in thus naming it. It agrees so well with Dr. Burmeister's description specifically that I need not add to that description beyond saying that in my example the colour of the upper surface is *pitchy* black rather than a genuine black, and the "small protuberance on the vertex of the head" is placed very far back and is very slight.

SEMANOPTERUS.

S. LONGICOLLIS, sp.nov.

Sat elongatus; subparallelus; convexus; nitidus; piceo-ferrugineus, rufo-hirtus; capite transversim rugato, tuberculo conico armato; prothorace canaliculato punctulato, tertia parte latiori quam longiori, lateribus postice haud sinuatis; elytris sat fortiter minus oblique tricotatis, costis postice abbreviatis, interstitiis subtriseriatim punctulatis; tarsorum posteriorum articulo secundo primo multo brevior. [Long. $7\frac{1}{2}$ -8, lat. $3\frac{5}{8}$ - $3\frac{3}{4}$ lines.

Maris pygidio ad latera crebre, in medio sparsim, punctulato.

Feminæ pygidio crebre sat æqualiter punctulato.

Compared with *S. minor* this species is comparatively longer and narrower; the head and prothorax are scarcely different except in the greater length (in proportion to the width) of the latter, and the absence of sinuation in the hinder part of its lateral outline; the sculpture of the elytra does not run in quite so oblique a direction; the sculpture of the pygidium is quite different, as follows—in the male it consists of rather close puncturation at the sides and very sparse in the middle, without any transverse wrinkles, and in the female of close and almost uniform puncturation with scarcely any trace of transverse wrinkling; while in *S. minor* it consists of close puncturation in both sexes (in the male, a little more sparse in the middle) accompanied by a very conspicuous system of short curved wrinkles or scratches; the second joint of the hind tarsi is barely two-thirds the length of the first, while in *S. minor* the two are about the same length.

From *S. angustatus* this insect may be distinguished by its longer and narrower prothorax, and its pygidium only fringed with hairs (while in *angustatus* fine erect hairs clothe the whole of the surface), and from *S. convexiusculus* by its very differently sculptured elytra. The other described species are all much larger.

Coonabarabran, N.S. Wales; taken by Mr. Sloane.

S. MINOR, Blackb.

I have lately received from Mr. Sloane, of Mulwala, specimens taken in various localities in N. S. Wales and Victoria which have the sides of the prothorax behind much more strongly sinuate (almost excised in fact) than in the type of this species, but as I can discover no other difference whatever, and moreover find some variability in this respect even in South Australian examples, I do not think they can be treated as distinct.

PROTÆTIA.

P. MANDARINA, Weber.

This species, recorded from the Philippine Islands, is stated in the Trans. Ent. Soc. 1882, p. 156, to occur very plentifully in Queensland, and to be in the habit of attacking the hives of *Trigona* (the stingless bee) in great numbers.

Protætia is regarded by M. Lacordaire as a section of *Cetonia*. It seems singular, if the above statement is correct, that the insect has hitherto escaped the notice of Australian Coleopterists. I do not think that any of the species attributed to *Cetonia* in Mr. Masters' Catalogue are identical with *P. mandarina*.

BUPRESTIDÆ.

BUBASTES.

B. INCONSTANS, sp.nov.

Colore variabilis, cuprea vel ænea, vel viridis, latera versus plus minus cupreo-purpurea; cylindrica; capite sat fortiter minus crebre, prothorace (hujus latitudine majori basi posita) crebre minus fortiter, elytris crebre sat subtiliter, sat rugulose punctatis; his apice obsolete emarginatis.

The head is slightly concave longitudinally with an impressed longitudinal line in the hinder part; the eyes are sub-vertical, oblong, faintly sinuate on their inner margin, widely remote. The prothorax is nearly half again as wide as long, about half again as wide at the base as in front, its sides slightly converging and nearly straight from the base to near the front whence they converge more strongly and arcuately; the front angles are obscure, the hind angles strong, acute, and pointed backwards, the base lightly bisinuate; the true margin runs almost entirely on the underside (increasingly so from the hind-angles forward), and is quite obsolete near the front; the surface bears an obscure

longitudinal furrow in its hinder half, which is deepened into a fovea immediately in front of the base. The elytra are slightly wider than the prothorax, are finely wrinkled in a transverse direction in front, and bear a number of irregular feebly-defined striæ which do not interrupt the general puncturation, and the interstices between which are in places feebly convex and (in most examples) here and there more or less lævigata. The under-side is very sparingly clothed with fine adpressed hairs, and is punctured more coarsely than the upper surface. The apical ventral segment bears a very peculiar elongate transverse sulcus in the hind face of its apex, which is much thickened; this segment is in one sex truncate behind and level; in the other sex it is turned up and rounded behind, and the penultimate segment bears at the middle of its apex a short erect blunt spine.

B. LATICOLLIS, sp.nov.

Obscure æneo-cuprea, latera versus plus minus purpureo-cuprascens capite prothoraceque (hujus latitudine majori in medio posita) crebre confuse, elytris subtilius, subrugulose punctatis; his apice oblique subemarginato-truncatis.

The head longitudinally is widely concave, but without any distinct impressed line; it is rather coarsely punctulate in front, the puncturation becoming finer and closer hindward. The prothorax is finely punctured on the anterior part of the disc and its puncturation thence becomes coarser and less close hindward and outward. [This sculpture of head and prothorax is of the same kind as in the preceding species, but is evidently closer throughout.] The prothorax is about a quarter again as wide as long and something less than half as wide again at the base as in front, its sides nearly straight (but distinctly diverging) from the base to about the middle whence they converge arcuately to the front; the front angles (as in *B. inconstans*) are quite obscure owing to the lateral margin being obsolete anteriorly, the hind angles strong, acute and pointed backward; the surface bears a longitudinal furrow feebly impressed, not reaching the front, rather deepened in front

of the base. The elytra are not in any part at all wider than the widest part of the prothorax; their sculpture scarcely differs from the same in *B. inconstans* save in being slightly finer, the punctuation, moreover, being more evenly distributed and scarcely interrupted on the interstices of the striæ which are less convex in front and more so near the apex (but these last two characters are slight and perhaps not very reliable); the outline of their anterior margin is very markedly more strongly convex corresponding to the evidently stronger bisinuosity of the hind edge of the prothorax; their apical sculpture does not differ from that of *B. inconstans* in any reliably specific manner, but the evenness of the marginal outline is in average specimens even less interrupted, while in some specimens there is an evident oblique truncation, the extremities of which are defined though not spinose. The underside and legs are conspicuously clothed with rather coarse adpressed short whitish scale-like hairs. The structure of the apical ventral segment appears to be as in *B. inconstans*, to which the present insect is closely allied, though differing considerably in the shape of the prothorax, &c., &c.

The preceding two species of *Bubastes* both appear to be near *B. sphenoida*, L. & G., so far as can be judged from the very brief description of that insect in which scarcely any tangible characters are mentioned, but "elytres bi-epineuses à l'extrémité" will not fit either of them. Moreover, there is a third species of *Bubastes* in the Adelaide Public Museum in which the elytra are bi-spinose at the apex, and which may be *sphenoida*, although I doubt it on account of the punctuation being coarser than the description of *sphenoida* would lead one to expect. From *Briseis conica*, L. & G., these insects differ in the non-denticulate margin of their elytra, from *Eurybia* by their much stouter and more robust form, &c., &c.

ELATERIDÆ.

TETRALOBUS.

This genus presents extreme difficulty to the student, as far as concerns its Australian species, owing partly to the close alliance of some of its members to others, and partly to the insufficiency

of some of the earlier descriptions. I have lately had in my hands a considerable collection of examples taken in various parts of Southern Australia (from Eucla to Melbourne), and also from various parts of the Northern Territory, and have been unable to consider those from Southern Australia as representing more than one very variable species. It is extremely difficult to find two specimens absolutely identical. I find variation to an endless extent in the development of the furrows or foveæ on the head and prothorax, in the outline of the prothorax (especially in the degree of its dilatation about and in front of the middle, and in the degree to which its posterior angles are directed outward), in the distinctness of the striation and the puncturation of the striæ of the elytra, and in the shape of the apex of the same (some examples having them separately rounded with scarcely any trace of a mucro, some having them separately rounded with a distinct mucro, and some having them conjointly rounded with a more or less defined mucro).

Turning to the published descriptions, one finds *T. Australasiæ*, Gory, to be the original Australian species, to which, some years later, the Rev. F. W. Hope added *Manglesi* and *Fortnumi*. Between these latter, and between either of them and *Australasiæ*, there seems to be no really tangible distinction except size. Some years later M. Candèze added *M. Murrayi*, with the comment, "Very near *Australasiæ*, from which one will nevertheless distinguish it easily by the longitudinal furrow of the head and prothorax, and the much less strong pubescence." Regarding these distinctions I will observe that the latter is very likely to depend upon the freshness of the specimens, and that the former is sufficiently slight, because in the descriptions we find (*Australasiæ*) "fronte longitrorsum profunde sulcata, prothorace canaliculata," and (*Murrayi*) "front canaliculé et fovéolé, prothorax présentant une ligne lisse au milieu." A few pages further on M. Candèze says of *Manglesi* that it is very near *Murrayi* (although he judges from the description of the former that its head is more square and its elytra more distinctly punc-

tulate-striate), and of *Fortnumi* that its distinction from *Australasiæ* is doubtful. A few years later still M. Candèze added another species from Southern Australia under the name *cylindri-formis*, which he says must be placed beside *Murrayi*, and a comparison of the descriptions furnishes no tangible difference better than that in one the length and width of the prothorax are "sub-equal," while in the other that segment is longer than wide. Finally, in describing another species from Northern Australia (a very distinct one), he assigns it a place near *cylindri-formis*, with a note that the latter species may be identical with *Fortnumi*.

My own impression is that all these five names represent one and the same species, and should stand in a catalogue as *Australasiæ*, Gory,—or at any rate the rest be relegated to an Appendix (which our Australian Catalogue sorely needs) of names not entitled without further evidence to a place in the body of the work.

The examples before me, which I consider as representing forms of *Australasiæ*, differ in length from 12 lines to 24 lines. The females are usually larger than the males and much more cylindrical with a decidedly stronger tendency to anterior dilatation of the prothorax. The head is more or less sulcate longitudinally, but the sulcus in many examples becomes feeble or even disappears before the front margin. The length of the prothorax down its middle is slightly more than its width across the base; the curve of its sides varies, being generally slight in the males and strong in the females in such fashion that in some examples of the latter the segment is wider just in front of the middle than its length down the middle; the disc is canaliculate (in some examples more strongly than in others), the channel usually abbreviated at both ends; the hind angles are sharp, more or less directed outward (most strongly so in the large females as a rule). The elytra are striated and the interstices are usually decidedly convex and closely and finely, but yet a little rugosely, punctured (the punctures a good deal run together by very fine transverse wrinkles); the striæ hardly distinctly punctured except near the shoulders and near the apex; in the largest females the interstices are usually

less convex, and the puncturation of the striæ more evident. In one very large female before me the interstices are quite flat and the striæ punctured throughout as in ordinary examples they are punctured near the shoulders (this example, I am told, was taken in company with ordinary specimens). So far as I can judge, too, the females are less pubescent than the males, but this may be accidental. One of the females before me is exceptionally small, and resembles the male in the outline of its prothorax; it is just possible that it may represent a good species, but I cannot identify it with any described, and think it more probably a variety. It should be added that in all the specimens I have seen there are one or two vague impressions on either side of the prothorax near the lateral margin.

MONOCREPIDIUS.

M. TEPPERI, sp.nov.

Fulvo castaneus; minus nitidus; minus elongatus; pube longiore sat dense vestitus; prothorace haud canaliculato, trans angulos posticos quam longitudine in medio latiori, a basi parum angustato, subtilius regulariter sat confertim punctulato, angulis posticis parum divaricatis bicarinatis; elytris prothorace angustioribus, a basi leviter attenuatis, apice vix emarginatis, fortius punctulato striatis, interstitiis sat planis leviter minus confertim punctulatis; prothoracis margine laterali antice in prosternum subducto; tarsorum articuli quarti lamella sat lata.

[Long. $5\frac{2}{3}$, lat. 2 lines (vix).

The above mentioned characters would place this insect in the tabulation of species given by M. Candèze (Mon. II. pp. 191, &c.) in the same section as *Brucki* and *Jekeli*, the former of which is a very large broad species from Victoria, and the latter is a very anomalous insect (exact habitat unknown), of extremely parallel form with elytra twice and a half as long as the prothorax, while this is a very ordinary-looking *Monocrepidius*, with elytra of normal form and very evidently less than twice and a-half the length of the prothorax down the middle. None of the species

described since (at any rate none from Northern Australia) are characterized as having the prothoracic margin passing to the underside and there forming the margin of a kind of prosternal gutter,—so I suppose it is distinct from them all.

From Northern Territory of S. Australia. Collected by Mr. J. P. Tepper, to whom I dedicate it, together with several other *Coleoptera* already described from the same locality.

M. juvenis, sp. nov.

Fuscus, antennis palpis pedibusque testaceo-flavis; minus nitidus; sat elongatus; pube longiore sat dense vestitus; prothorace haud canaliculato, trans angulos posticos quam longitudine in medio subangustiori, a basi evidenter angustato, subtilius regulariter crebre punctulato, angulis posticis haud divaricatis bicarinatis; elytris prothorace vix angustioribus, a basi attenuatis, apice vix emarginatis, fortius punctulato-striatis, interstitiis sat planis leviter minus confertim punctulatis; prothoracis margine laterali antice in prosternum subducto; tarsorum articuli quarti lamella sat lata.

[Long. 5-6, lat. $1\frac{2}{3}$ - $1\frac{3}{4}$ lines.]

This species is structurally very near to the preceding, and the sculpture and pubescence of its surface are very similar, but I think it certainly not a mere variety, as the entirely different colour is accompanied by very different proportions; nor are the differences sexual, as I have both sexes before me. The present insect is a slender elongate form much narrowed before and behind; the other of robust appearance, rather short and parallel as compared with many of its congeners. In *M. juvenis* the length of the prothorax down the middle is distinctly greater than its greatest width (across the basal angles), which latter, moreover, scarcely exceeds the greatest width of the elytra,—while in *M. Tepperi* the width across the basal angles of the prothorax is very evidently (about as 8 to 7) wider than the widest part of the elytra and than the length of the prothorax down the middle. They differ, too, in respect of another character that I find not without its value in this difficult genus,—in *Tepperi* the external margin of the

prothorax is visible from above (that is on both sides from one, point of view) outside the external keel of the hind angle to within a hairsbreadth almost of its hind apex,—while in *juvenis* from a similar point of view, it seems to disappear under the external keel considerably *before* its hind apex.

Northern Territory of S. Australia; in my collection; also taken by Mr. J. P. Tepper; also by Prof. Tate.

M. PALMERSTONI, sp. nov.

Fusco-ferrugineus; pedibus flavis, capite antice scutello prothoracisque angulis posticis rufescentibus; minus nitidus; sat elongatus; pube longiore sat dense vestitus; prothorace haud canaliculato, trans angulos posticos quam longitudine in medio vix latiori, a basi parum angustato, subtilius crebre subrugulose punctulato, angulis posticis bicarinatis vix divaricatis; elytris prothorace angustioribus a basi attenuatis, apice rotundatis, fortius punctulato-striatis, interstitiis sat planis leviter minus confertim punctulatis; prothoracis margine laterali antice in prosternum subducto; tarsorum articuli quarti lamella minus lata.

[Long. $3\frac{2}{3}$, lat. $1\frac{1}{2}$ lines (vix).

The narrower lamella on the 4th joint of the tarsi would perhaps place this species in the last division of M. Candèze's Section III., in which case its place in that section would be beside *M. fictus*, from which the absence of a longitudinal carina on the head will at once distinguish it. In M. Candèze's subdivision of the earlier division it would fall side by side with the preceding two species and the two others already mentioned. From the latter two it differs as *M. Tepperi* does. From *M. Tepperi* (its nearest real ally, I think) it differs by its very small size, somewhat different coloration, less robust build, closer and slightly rugose prothoracic puncturation, lateral margins of prothorax posteriorly hidden by the external keel (as in *M. juvenis*), and apex of elytra not at all emarginate (this latter may possibly not be a constant character).

Northern Territory of S. Australia; taken by Mr. J. P. Tepper.

M. fortis, sp. nov.

Fuscus, antennis palpis pedibusque pallidioribus; minus elongatus, pube longiore sat dense vestitus; prothorace fortiter convexo, vix evidenter canaliculato, trans angulos posticos quam in medio longitudine vix latiori, a basi vix angustato, confertim subtilius subrugulose punctulato, angulis posticis bicarinatis vix divaricatis; elytris prothorace vix angustioribus, a basi parum attenuatis, apice vix emarginatis, fortius punctulato-striatis, interstitiis planis crebre subtilius punctulatis; prothoracis margine laterali in prosternum subducto; tarsorum articuli quarti lamella sat lata. [Long. $5\frac{1}{2}$, lat. $1\frac{4}{5}$ lines (vix).

A species of robust build similar to that of *M. Tepperi*, and belonging to the same group; it may be distinguished from that insect by its prothorax being more strongly and somewhat rugosely punctulate with the disc strongly convex and the sides more rounded, scarcely narrowed from the base to a little in front of the middle, with its lateral margins much more hidden by the external carina of the posterior angles which are less divaricate, and by the interstices of the elytra having less tendency to convexity; its colour also is quite different. From *M. Palmerstoni* it is distinguishable by its greatly superior size, different coloration, longer hind angles of prothorax, &c.

Northern Territory of S. Australia; collected by Prof. Tate.

M. variegatus, sp. nov.

Piceo-ferrugineus, capite, palpis, antennis, pedibus et elytrorum dimidio basali, rufis; robustus, sat latus, pube longiore sat dense vestitus; prothorace haud canaliculato, trans angulos posticos quam in medio longitudine parum latiori, a basi angustato, crebre sat fortiter subrugulose punctulato, angulis posticis bicarinatis divaricatis; elytris prothorace vix angustioribus, hoc duplo longioribus, a basi sat fortiter attenuatis, apice interno leviter emarginatis, striatis, striis antice fortiter postice gradatim obsoletius punctulatis; prothoracis margine laterali in prosternum subducto; tarsorum articuli quarti lamella sat lata.

Long. 6-8, lat. $1\frac{4}{5}$ - $2\frac{2}{5}$ lines.

An exceedingly distinct species. The proportion of colours on the elytra varies somewhat, the dark portion being sometimes limited to rather less than the apical half, in some examples occupying fully the apical half and even being produced up the suture a little beyond it; this dark portion seems to be always sharply defined and not gradually shaded off to the red part. The elytra are exceptionally short, very little exceeding twice the length of the prothorax. The lamella on the fourth tarsal joint runs out quite to the middle of the apical joint.

Northern Territory of South Australia; taken by Dr. Bovill.

HETERODERES.

H. CARINATUS, sp. nov.

Fusco-ferrugineus; antennis palpis pedibusque testaceis; sat elongatus, pube albida longiore sat dense vestitus; prothorace leviter canaliculato, trans angulos posticos quam in medio longitudine vix latiori, a basi parum angustato, confertim subtiliter et fortius sparsim punctulato, angulis posticis bicarinatis parum divaricatis; elytris prothorace vix angustioribus, a basi leviter attenuatis, apice rotundatis (intus vix mucronatis), fortius punctulato-striatis, interstitiis subplanis crebre subtiliter punctulatis; fronte longitudinaliter carinata; prothoracis margine laterali antice in prosternum subducto; tarsorum articuli quarti lamella minus lata. [Long. $5\frac{3}{8}$, lat. $1\frac{3}{8}$ lines.

Distinguished from *H. (Monoorepidius) albidus*, MacL., by the carina on its head.

Northern Territory of S. Australia; collected by Prof. Tate.

ACRONIOPUS.

A. PALLIDUS, sp. nov.

Rufo-testaceus, breviter pubescens; prothorace quam in medio longiore paulo latiore, hoc capiteque æqualiter crebre fortiter punctulato haud canaliculato; elytris punctulato-striatis, interstitiis convexis crebre subtilius punctulatis. [Long. 3, lat. $\frac{4}{5}$ line.

This insect has all the facies of an *Acroniopus*, and most of the structural characters—the convex forehead and front not margined, the antennæ with second and third joints very small, joints 4-10 sub-triangular and 11 elongate oval without appendage, the lateral margin of the prothorax not turned under at the apex, the posterior coxæ narrow and considerably dilated near the base but not dentate, the elongate basal joint of the posterior tarsi, &c., &c.; but in some respects it seems to approach *Ascesis*, having the intermediate coxæ sub-contiguous, the prosternal sutures more curved than in *Acroniopus* (typical), and the fourth joint of the tarsi scarcely lamellated beneath. This joint has a small flattened space near the apex, but it does not seem to be a true lamella. The development of the lamellæ varies so much in some genera (*Monocrepidius* for example) that I do not like to found a new genus on this alone, and I think the best course is to refer the insect to *Acroniopus* with these qualifying remarks.

Northern Territory of S. Australia; taken by Mr. J. P. Tepper.

MALACODERMIDÆ.

TELEPHORUS.

T. TEPPERI, sp.nov.

♂. Rufo-testaceus; elytris testaceo-brunneis pubescentibus, his apicem versus, antennis (basi excepta), genubus, tibiis tarsisque, infuscatis; prothoracis lateribus pone medium concavis.

[Long. $4\frac{1}{2}$ lines.

The prothorax is half again as wide as long, its front evenly convex, its sides gently curved to behind the middle, and thence dilated again to the base with which they form a sharp and prominent angle from which the base runs obliquely backward for a certain distance and then is slightly concave in the middle; the basal and (especially) the lateral margins are rather widely and strongly reflexed; the surface is shining and not punctured. The antennæ are more than half the length of the body, joint 1 equal to 2 and 3 together, 2 half the length of 3, 3-10 compressed

elongate triangular, 11 longer than 10, oblong and pointed, joints 1 and 2 wholly and 3 partially, testaceous. The claws are simple. Extremely like the European *T. fulvus*, Scop., except as regards the differences involved in the above description; the elytra, however, though much less shining are much more obscurely (scarcely distinctly) punctulate.

Northern Territory of S. Australia; collected by Mr. J. P. Tepper.

N.B.—Mr. Tepper's collection contains two specimens (♂ and ♀) of a *Telephorus* which I hesitate to distinguish from the above specifically. It is smaller (3-4 l.) and much more obscure in colour, the parts characterized above as rufo-testaceous being pale fuscous, with the sterna and basal portions of the ventral segments dark brown, the tibiæ moreover being less noticeably darker than the femora. In the female the antennæ are only about half the length of the body.

T. PALMERSTONI, sp.nov.

Testaceus; elytris pubescentibus, obscure cyaneis, margine laterali antice flavo; genubus tibiis tarsisque (plus minus) et antennis (basi excepta) infuscatis; elytris leviter rugulose punctulatis. [Long. 3-3½ lines.

Apart from the entirely different coloration this species closely resembles the preceding, but the following differences (though slight) justify its being regarded as a distinct species,—the lateral margins of the prothorax are only very slightly concave in outline and its hind angles are very feebly marked; the elytra are very distinctly rugulose-punctulate,—almost as strongly as those of *T. fulvus*, Scop.

Northern Territory of S. Australia; collected by Mr. J. P. Tepper.

The preceding two species appear to be genuine members of the genus *Telephorus*; both appear to be distinguishable from such of their congeners as bear a general resemblance to them by the testaceous colour of the basal joints of their antennæ.

LAIUS.

L. VARIEGATUS, sp.nov.

Sparsim longe nigro-hirsutus; supra colore variegatus; capite cyaneo; prothorace fulvo, antice transversim late nigro-uni-lineato, disco maculatim infuscato; scutello cyaneo; elytris aureo-flavis, basi cyaneis, pone medium fascia versicolori (secundum marginem lateralem et suturam et circum apicem continuata) instructis; corpore subtus, antennis (articulis 3 basalibus flavis exceptis) femoribusque nigro-fuscis, tibiis tarsisque rufescentibus; capite subtilissime (antice crebre postice sparsim) punctulato; prothorace quam longiori tertia parte latiori vix evidenter punctulato; elytris crebre fortius rugulose punctulatis. [Long. $2\frac{1}{2}$, lat. $1\frac{1}{8}$ lines.

On each elytron the base is entirely occupied by a cyaneous patch, which is extremely narrow at the suture and moderately so on the lateral margin, but on the disc runs down the elytron nearly a third of its length; a little behind the middle there commences a mark (of a reddish-brown colour variegated with cyaneous) the front margin of which is a curve extending from the lateral margin (about a third of the length of the elytra from the apex) to the suture very near its apex, and including the whole space to the apex except a large round spot of golden yellow colour similar to that of the middle part of the elytra. The basal joint of the antennæ in the specimen before me (I am doubtful of its sex) is elongate piriform, equal in length to the next two together; the 2nd springs from the external apex of the first (so that the antennæ appear to be geniculated in an external direction) and is longer than the next two together; the rest become gradually longer and more slender.

Northern Territory of S. Australia; collected by Mr. J. P. Tepper.

L. MAJOR, sp.nov.

Sparsim longe hirsutus; supra colore variegatus; capite nigro, antice cum labro rufo, inæquali, subtiliter sat crebre punctulato; prothorace rufo, quam in medio longiori quinta parte latiori, vix

evidenter punctulato, basin versus transversim impresso, lateribus fortiter rotundatis, angulis posticis nullis, basi medio emarginata ; scutello cyaneo-nigro ; elytris rufis, crebre sat fortiter subrugulose punctulatis, magna parte humerali et fascia arcuata apicem versus cyaneis ; prosterno abdomineque rufis ; meso- et meta-sternis cyaneis ; pedibus (coxis, femoribus et tibiis anticis rufis exceptis) nigricantibus ; antennis (articulis basalibus 2 rufis exceptis) obscuris. [Long. 4, lat. 2 lines (vix.)

Maris antennarum articulis primo et secundo magnis ; hoc valde depresso, intus valde angulatim dilatato, supra inæquali.

The hind margin of the humeral spot commences on the lateral margin at a distance from its base of about a fifth of its whole length, runs out in a curve (about three-quarters of the distance across the elytron) towards the suture, and then proceeds obliquely to the scutellum. The post-median fascia is in width about a fifth of the length of the suture ; in shape it bears a rough resemblance to a horse shoe placed on each elytron with its convexity forward and nearly attaining the middle of the elytron. The basal two joints of the antennæ (in the male) are nearly equal to each other in length, and together are quite as long as the head ; the 2nd joint is attached to the external corner of the 1st ; on its inner side it runs out from close in front of its base nearly at a right angle to the line of the antenna, so that here the joint is as wide as long, then with a sharp angle its inner outline runs sinuously to the narrow apex of the joint ; on its outer side the joint is gently curved ; of the remaining eight joints each is more slender than the preceding one, the 1st and 3rd shorter than the other 5, the 1st, 2nd and 3rd streaked with yellow, the apical the longest.

Differs from all other described Australian species of the genus, *inter alia*, by its greatly superior size.

Northern Territory of S. Australia ; taken by Mr. J. P. Tepper.

NATALIS.

N. SEMICOSTATA, sp. nov.

Minus elongata ; picea, nonnullis exemplis antennarum arto. ulto. pedibusque rufescentibus ; illo valde compresso, superficie

compressa apice abrupte truncata interne acuminata; elytris antice crassissime, postice gradatim subtilius, cancellato-punctulatis, interstitiis alternis postice fortiter costatis.

[Long. 10-12, lat. 3-3½ lines.

The head has a small obscure depression between the eyes, and is finely and closely punctulate, with some scattered punctures of larger size. The prothorax is slightly wider than long (in some examples a little more so than in others); its sides are scarcely constricted just behind the front and then a little rounded, so as to be at their widest (in some examples scarcely so) a little in front of the base; its surface is punctured in the same fashion as the head and bears (as usual in the genus) a longitudinal fovea on the disc, and an angulate impression (not always strongly defined) near the front; its sides are strongly rugose. The elytra to nearly the middle are sculptured much as those of *N. porcata*, bearing longitudinal lines the interstices between which are divided into quadrate cavities by transverse lines, and the transverse being scarcely less elevated than the longitudinal lines the latter appear scarcely costate; but before the middle the transverse, and the alternate longitudinal, lines begin to fail, the latter soon disappearing,—so that in the hinder part of the elytra the alternate interstices appear as strong costæ bordered on each side with a row of fine punctures, and having the intervals between them quite flat. The shape of the strongly compressed apical joint of the antennæ (having its flattened face abruptly truncate at the apex with one of the front angles quite blunt and the other acute), seems to be distinctive of the species. In the examples before me (perhaps all of the same sex) the two ventral segments preceding the apical two are closely punctulate in the middle and densely clothed with golden pubescence, the rest of the ventral surface being sparsely and faintly punctulate and thinly clothed with hairs. There appears to be some thin pubescence on the upper surface, but all the specimens before me are evidently abraded.

Differs from the previously described species as follows, *inter alia*,—from *Titana*, Thoms., in much smaller size, from *Mastersi*, MacI., in the prothorax not being “much longer than wide,”—

from *porcata*, Fab., and *cribricollis*, Spin., in the shape of the apical joint of the antennæ.

Northern Territory of S. Australia ; in my collection, and taken by Mr. J. P. Tepper.

BOSTRICHIDÆ.

APATODES, gen. nov.

Gen. *Apaten* simulans, sed antennis clava lamellata terminatis.

I regret being unable to give the characters of this genus more fully, but unfortunately I have not a specimen before me in fit condition to bear the necessary manipulation. The resemblance to *Apate* is very close indeed, and as far as I have been able to investigate the structure it does not differ from that of *Apate* except in having the antennal club composed of three lamellæ, each of which is about equal in length to all the preceding joints taken together. This character alone is sufficient to justify generic separation. The basal joint is elongate, the 2nd very little longer than each of the next five, which are all very short.

A. MACLEAYI, sp. nov.

Nigro-brunneus ; capite (? alterutrius sexus solum) transversim 4-tuberculato ; prothorace parum transverso, antice ad latera spinoso, antice et postice obscure granulato, disco in medio sat rugulose tuberculato ; elytris crebre vix lineatim rugulosis, parte postica declivi, spinis 2 in medio instructa. [Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

The two spines on the elytra are placed half-way down the posterior declivity, one on either side of the suture, and point backward and outward.

This insect must very closely resemble *Bostrychus bispinosus*, MacL., (Trans. Ent. Soc. N.S.W. II. p. 276) and may possibly be identical with it, although apparently larger than that insect and scarcely fitting the description in respect of the prothoracic sculpture. But in any case *Bostrychus bispinosus* is a preoccupied name.

N. Territory of S. Australia ; collected by Mr. J. P. Tepper.

TENEBRIONIDÆ.

PLATYDEMA.

P. OBSCURA, sp. nov.

Ovalis; supra nigra, subtus picea, antennis, palpis pedibusque sordide testaceis; capite maris inter oculos cornubus 2 acuminatis antice directis instructo; prothorace quam longiori plus duplo latiori; elytris punctulato-striatis, interstitiis punctulatis fortiter convexis. [Long. $2\frac{1}{2}$, lat. $1\frac{1}{2}$ lines (vix).

Resembles *P. tetraspilota* in shape. The prothorax is quite twice and a half as wide across the base as it is long down the middle and has its front margin truncate or nearly so, its hindmargin strongly bisinuate; it is margined all round, rather strongly and evenly narrowed from base to apex with its surface moderately and rather closely punctured, and an elongate fovea running forward from the base on either side about halfway between the middle and the lateral margin. The horns on the head are not much shorter than that segment and viewed from the side are triangular, their upper outline running almost straight forward. The eyes of the example before me are of a testaceous colour.

Resembles *P. oritica*, Pasc., in which, however, *inter alia*, the prothorax is said to be less than twice as wide as long. Also probably resembles *P. Pascoei* and *laticolle*, Macl., (apparently described on females); it appears to be considerably larger than the former and differently coloured, and to differ from the latter *inter alia* by its prothorax strongly bisinuated at the base. The other described species are very different.

N. Territory of S. Australia; collected by Prof. Tate.

TRIBOLIUM.

T. FERRUGINEUM, Fab.

This species is not included in Mr. Master's Catalogue; it is, however, plentiful,—doubtless introduced. I have it from South Australia and the Northern Territory.

TOXICUM.

T. ADDENDUM, sp.nov.

Nigrum, minus nitidum, palpis tarsisque rufescentibus; prothorace antice elytris parum angustiori, postice angustato, fortius nec crebre (ad latera crebrius) punctulato, antice posticeque bisinuatis, lateribus sat rectis, angulis posticis subacutis; elytris parallelis, vix striatis, lineatim punctulatis, punctis sat validis, interstitiis haud punctulatis; antennarum clava 3-articulata; oculis haud divisis.

♂. Capite concavo, cornubus antice inclinatis,—anticis 2 parvis rectis acuminatis,—posticis 2 elongatis compressis apice hirsutis lateraliter æqualiter curvatis instructis.

♀. Capite haud cornuto, corpore fortius punctulato.

[Long. $5\frac{1}{2}$, lat. $2\frac{1}{2}$ lines.

The Australian species of *Toxicum* previously described having antennæ with three joints to the club and not differing much in size from the present species, are *distinctum*, MacI., and *parvicorne*, MacI. The former of these differs *inter alia* in the extremely strong puncturation of the elytra, and the parallel sides of the prothorax; the latter by the latter of the characters just mentioned and by the curve of the posterior horns being close to the apex.

In the present species the posterior horns are evenly bent inward from considerably below the middle, and are not far from meeting at the apex; the prothorax is more than a third again as wide as its length down the middle, and is at its widest immediately behind the front, whence it is very decidedly narrowed to the base.

N. Territory of S. Australia; collected by Mr. J. P. Tepper.

HYPAULAX.

H. INTERIORIS, sp.nov.

Oblongus; convexus; supra minus nitidus; niger, antennis apice palpisque rufo-piceis; prothorace quam longiori quinta parte

latiori, basi quam margine antico vix latiori, lateribus (pone medium leviter angulatim dilatatis postice sinuatis) incrassatis intus fortiter anguste sulcatis, basi incrassata haud bisinuata, angulis anticis rotundato-obtusis vix productis, angulis posticis parvis acutis extrorsum retrorsumque inclinatis, dorso nec foveato nec canaliculato; elytris haud striatis, seriatim punctulatis, punctis modicis parvisque intermixtis, interstitiis planis minute coriaceis et punctulatis, basi late marginata; mandibulis apice bifidis.

[Long. 9 lines, lat. $3\frac{1}{2}$ lines.

The mentum is moderately transverse, widely notched in front, finely punctulate, devoid of hairs; gular furrow extremely strong and placed rather far back; prosternal process preceded by a furrow (as in *H. Orcus*, Pasc.), its middle carina narrow and produced behind slightly beyond the lateral carinae; third and fourth ventral segments slightly sinuous behind; epistomal suture fairly defined and arched; labrum scarcely emarginate in front; 3rd joint of antennae decidedly longer than 4th; scutellum very small.

The lateral margin of the prothorax is strongly thickened in its front third, and then is suddenly attenuated, thickening out again immediately in a kind of slight angular dilatation behind which it again becomes attenuated. The interstices of the elytra are perfectly flat except at the extreme base where they are very slightly convex; there is no trace of the large punctures near the scutellum on the first interstice that are found in many species of the genus; the shoulders are roundly obtuse and not prominent, the sides scarcely sinuous behind. The curvature of the anterior tibiae is very slight.

The non-striate elytra marked with rows of mingled small and larger punctures, flat finely punctulate interstices, non-prominent shoulders, non-sinuate elytral apices, black legs, bifid mandibles, &c., taken together will distinguish this species from its congeners.

MacDonnell Ranges, Interior of Australia; taken by Mr. A. S. Wild.

H. IRIDESCENS, sp.nov.

Oblongo-ovatus; sat nitidus, capite prothoraceque opacis sub-iridescentibus exceptis; niger, antennis apice tarsisque rufescentibus; capite inter oculos bifoveato; prothorace quam longiori dimidio, postice quam antice paullo, latiori; lateribus pone medium dilatato-rotundatis, postice sinuatis, incrassatis, intus haud sulcatis; basi vix bisinuata anguste marginata; angulis anticis rotundatis, posticis acutis retrorsum inclinatis; dorso subtiliter obsolete longitudinaliter canaliculato; basi utrinque foveata; elytris sulcato-punctulatis; punctis permagnis; interstitiis ad latera manifeste nec fortiter, suturam versus vix, acute elevatis; basi minus crasse marginata; mandibulis apice bifidis. [Long. 8, lat. $3\frac{3}{8}$ lines.

This species seems to oscillate between *Hypaulax* and *Chileone*, which are, I think, too close to be treated as distinct. The following characters have been omitted from the specific diagnosis because if the two genera named above are to stand, this insect might perhaps have to be treated as forming a third closely allied genus. Mentum moderately transverse; angulated at the sides; front margin notched in the middle; surface convex, subcarinate down the middle with a depression on either side, hirsute (? only in some examples); gular furrow moderate, placed well behind the submentum. Epistomal suture well marked, curved. Labrum rather decidedly emarginate in front. Joints 3 and 4 of antennæ nearly equal, a little longer than the following joints; joints 8-11 gradually and not strongly thickened. Prosternal process distinctly turned up at the apex. Third and fourth ventral segments sinuate behind. In other respects appears to agree with the generic characters of *Hypaulax*.

It may be added that the punctures in the rows on the elytra are placed far apart, and that there are about 12 to 15 punctures in each row from the base to the beginning of the posterior declivity (except the row nearest the suture which is bent round in front nearly to the base of the third row, and so contains more punctures); that the head and prothorax are scarcely visibly (or

very finely and sparingly in one example before me) punctulate, and that the front tibiae are only gently curved.

Resembles *H. opacula*, Bates, in many respects, but the mentum seems to be quite different, the prothorax more strongly transverse, the elytra very differently sculptured (in *opacula* they are "faintly striate" with their punctures "irregular, frequently two or three run together"), &c., &c.

The elevated apex of the prosternal process (appearing as though it bore a shining tubercle) is a notable character, as also the comparative feebleness of the thickened basal margin of the elytra, and the evident (though slight) iridescence of the head and prothorax.

Northern Territory of S. Australia; collected by Mr. J. P. Tepper.

LYGESTIRA.

L. SIMPLEX, Westw.

An example recently taken near Adelaide by Mr. Rötke agrees quite satisfactorily with the description of this insect, and also with that of *L. funerea*, Pasc., which, I should say, is almost certainly a synonym of the same species.

AMARYGMUS.

M. Blessig (Hor. Soc. Ent. Ross. 1861) in founding the genus *Chalcopterus* for certain species that had previously been attributed to *Amarygmus*, together with some previously undescribed insects, expresses a doubt whether any true *Amarygmus* is to be found in Australia, stating, however, that the number of species he had been able to examine was very small. He states that in true *Amarygmus* the apex of the mandibles is bifid, and that in all the Australian species he had seen, the mandibles are truncate at the apex. The observation is undoubtedly a valuable one, whether *Chalcopterus* be regarded as a genus or merely a sub-genus; but the conjecture of the non-occurrence in Australia of true *Amarygmus* is a mistaken one, as there are many species with the mandibles formed as he asserts them to be in that genus.

A. DIAPERIOIDES, sp.nov.

Ovalis ; niger, supra obscure cyaneus, epistomate labroque antice palpisque plus minus piceo-rufis, tarsis dilutioribus ; capite crebre, prothorace sat sparsim, fortius punctulatis ; hoc basi quam elytrorum basis vix angustiori, quam longitudo quamve margo anticus dimidio latiori, lateribus leviter arcuatis, basi margineque antico bisinuatis ; elytris fortiter striatis, striis subtilius punctulatis, interstitiis leviter convexis sparsim subtiliter punctulatis ; segmentis ventralibus vix manifeste punctulatis, undatim longitudinaliter strigosis ; antennis apicem versus manifeste incrassatis.

[Long. $2\frac{3}{4}$, lat. $1\frac{1}{2}$ lines.

This is a true *Amarygmus* as distinguished from *Chalcopterus* ; it is very distinct from all the hitherto intelligibly described species, and does not seem to fit even any of Boisduval's laconic diagnoses. It is perhaps nearest (but not very near) to *A. maurulus*, Pasc.

Northern Territory of S. Australia ; collected by Mr. J. P. Tepper.

CHALCOPTERUS (AMARYGMUS) AMETHYSTINUS, Fab.

This species belongs to the genus *Chalcopterus*, having mandibles truncate at the apex. It has been taken in the N. Territory of S. Australia by Mr. J. P. Tepper. The uniform bright blue colour (in some specimens with a violet tone in certain lights) of its upper surface and its red femora, together with its small prothorax, and elytra punctured in conspicuous rows (consisting of uniform rather strong punctures not placed very close one to another), the intervals between which are hardly visibly punctulate, render it an easily recognisable insect.

C. LONGIUSCULUS, sp.nov.

Elongatus ; subparallelus ; niger, elytris cyaneis violaceomicantibus, epistomate labroque antice late testaceis ; capite crebre (spatio inter oculos sparsius excepto), prothorace minus crebre, subtilius punctulatis ; hoc elytris multo angustiori, basi

quam longitudo quamve margo anticus minus duplo latiori, lateribus pone medium subparallelis; elytris pone medium subdilatatis, fortiter striatis, striis crebre cancellato-punctulatis, interstitiis sat fortiter rotundato-elevatis sparsim subtilissime elevatis; segmentis ventralibus subtiliter minus crebre punctulatis, antice sat fortiter subreticulatim strigosis; antennis elongatis, apice vix dilatatis. [Long. 8, lat. $3\frac{3}{8}$ lines.

The elytra are more than four times as long, and (at their widest) quite half again as wide, as the prothorax; the nature of the puncturation of their striæ (arising from fine transverse carinæ connecting the raised interstices) is unusual in the genus.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

CISTELIDÆ.

METISTETE.

M. (ALLECULA) PIMELOIDES, Hope.

I have specimens (taken near Adelaide and in Kangaroo Island) of an insect which agrees very well with the description of this species except in respect of size. Mr. Hope gives 8 lines as the length, but the largest specimen before me does not exceed 7 lines; in allied species, however, I find so wide a variation in size that I do not consider this an important discrepancy. The insect is apparently a member of the genus *Metistete* (which, however, is very insufficiently characterised by its author). As the original description is very brief, I furnish a fuller one, as follows:—

Black; thinly clothed with erect hairs which are reddish towards the apex of the elytra; the front of the clypeus and of the labrum, the wide and conspicuous membranous connection between the 3rd and 4th, and the 4th and 5th ventral segments, the apex of the last ventral segment and the claws, red; coxæ more or less pitchy; antennæ obscure fuscous towards the apex, the apical two joints obscure ferruginous. Head little elongated, strongly but not coarsely punctured, the punctures very close and more or less (especially in the hinder part) running into each

other longitudinally; eyes large,—their distance apart equal above to the length of the basal joint of the antennæ (below they are very widely separated). Maxillary palpi with the 2nd joint equal in length to the greatest width of the apical joint, which is very strongly produced on the inner side so as to be transversely triangular; the 3rd joint small and short but angularly produced within. Antennæ equal to three-quarters of the body in length; basal joint short and moderately stout, joint 2 very small, 3 quite twice as long as 1 and 2 together, 4-6 successively shorter, the rest not differing much in length but gradually a little more slender; all the joints after the first rather slender. Mandibles broad and slightly notched at the apex. Prothorax slightly wider than long, slightly wider at base than in front, its front angles rounded off, its hind angles slightly obtuse but well-defined, its sides rather strongly rounded, its surface very convex (especially longitudinally) and punctured uniformly with the hinder part of the head. The elytra at their base are of the width of the base of the thorax; they dilate gradually to a little behind the middle and then contract to the apex, which is acuminate; the shoulders are quite obsolete; each elytron bears 10 punctulate striæ of which the first is abbreviated; the punctures in the striæ are somewhat quadrate and very distinct in front, but become obsolete behind the middle; the interstices are wide and flattish in front, becoming gradually narrower and more convex hindward, and are transversely rugose and distinctly, but not very closely, punctured; the epipleuræ are sub-vertical. The scutellum is rather finely and rather closely punctured. The legs are rather stout and very long, the hind femora reaching nearly to the apex of the hind body. The anterior tibiæ are angularly dilated within, just above the middle in the ♂. The anterior four tarsi bear a lamella under each joint except the last; of the hind tarsi the penultimate joint only is lamellated; joints 2 and 3 together are on the front tarsi slightly longer than, on the middle equal to, on the hind shorter than, the first.

The apical ventral segment in the male is nearly twice as long as the preceding segment; a forceps-like appendage projects beyond

it; each arm of the forceps is very wide, depressed and curved, so that the broad truncate apex of either is turned towards the other, and each angle of the truncate end bears a sharp hooked tooth; this appendage in many dried examples is only very partially exerted.

Judging from Mr. Newman's brief description of his *Tanychilus gibbicollis* the present species must be very near it, but seems to differ in its elytral striæ not being interrupted in front. If this interruption of the striation may have been an individual peculiarity of the type, it seems likely enough that *Allecula pimeloides*, Hope, (the insect here described as I believe) may be the same as *Tanychilus gibbicollis*, Newm.

M. (ALLECULA) ELONGATA, MacL.

The description of this insect points to its being congeneric with the preceding species and very close to it, but as there is no mention of the striæ on the elytra being punctured (other than the statement that the elytra generally are "densely and finely punctate,") I presume it is distinct.

M. LINDI, sp.nov.

Augusta; elongata; sat nitida; pilis erectis vestita; nigra, antennis pedibusque plus minus picescentibus; clypeo labroque antice, tarsis apicem versus, et abdominis segmentis apicalibus 3 postice, rufescentibus; capite crebre subfortiter, prothorace scutelloque sparsim minus fortiter, punctulatis; elytris striatis, striis (antice manifeste, postice vix perspicue) subtilius crebre punctulatis; interstitiis sparsim punctulatis, antice planis latis, postice convexis minus latis.

[♂ Long. 5, lat. $1\frac{3}{8}$ lines; ♀ Long. 6, lat. $2\frac{1}{8}$ lines.

♂. Tibiis anticis intus supra medium angulatim dilatatis; oculis sat approximatis; antennis elongatis; segmento ventrali apicali forcipite instructo.

♀. Tibiis simplicibus; oculis minus approximatis; abdominis apice haud forcipite instructo; antennis minus elongatis.

Very similar to the insect described above as *M. pimeloides*, Hope. Differs chiefly in the still narrower and more elongate form, in the very much less close puncturation of the prothorax, in the much smaller size of the punctures in the striæ on the elytra, and in the less convexity and more sparse puncturation of the interstices between the elytral striæ, which, moreover, are not transversely rugose.

The antennæ of the male are more than $\frac{3}{4}$, those of the female not much more than $\frac{1}{2}$, the length of the body. The forceps-like process at the apex of the hind body of the male is but little exerted in the single ♂ specimen before me, but it seems to resemble that of *M. pimeloides* except in the apices of the truncate ends of the forceps not being toothed,—but the specimen is so much damaged that possibly teeth may have been broken off.

The red colouring on the hind body is as in the preceding species. Port Lincoln.

APELLATUS.

A. PALPALIS, MacI.

An insect agreeing very well with the description of this species, and which I cannot doubt is identical, occurs all over S. Australia. During a recent visit to Port Augusta I observed it in the utmost profusion over the whole neighbourhood,—under bark of various trees, under stones, running on the ground, flying in the sunshine, and immolating itself in lamps at night. Individuals which I ascertained with certainty to be the females of this species agree perfectly with the description of *A. Mastersi*, MacI. The females, however, are very variable in colour and markings; I have seen some examples agreeing in these respects with the males.

In the male the ante-penultimate joint of the maxillary palpi is very long and slender (scarcely shorter than the distance from the base of the antennæ to the apex of the labrum), the penultimate less than half as long and strongly dilated from base to apex, and the apical joint about twice the length of the penultimate, elongate-cultriform in shape with its outer margin strongly concave; the antennæ are about half the length of the body, joints

1-3 moderately slender (2 very short, 3 a little longer than 1), 4 scarcely longer than 3, 5-10 shorter, 11 slightly the longest of all, 4-8 dilated (each more strongly in succession), 9 and 10 gradually less dilated, 11 slender; the posterior tibiae have a small tooth on their inner margin near the apex, and the eyes are almost contiguous on both surfaces of the head.

In the female the maxillary palpi are scarcely longer than the long joint in the male, the antennae scarcely differ from those of the male except in the intermediate joints not being dilated, the posterior tibiae are unarmed, and the eyes are a little more widely separated both above and below.

There are five ventral segments (of which the last is evenly rounded at its apical margin) in both sexes. The hind-body (except the base in some examples) is pitchy black.

The size varies from $2\frac{3}{4}$ to 4 lines.

A. APICALIS, sp.nov.

♀. Testacea, elytris abdomineque apice piceis; capite prothoraceque subtiliter creberrime punctulatis; elytris punctulato-striatis; interstitiis (apicem versus convexis) subtilius sat crebre punctulatis. [Long. 4, lat. $1\frac{1}{2}$ lines.

Extremely close to the corresponding sex of *A. palpalis*, MacL. Apart from colour and markings, the eyes are more approximate,—almost as close as in *palpalis* ♂,—and the head and prothorax are evidently more finely and closely punctured. The latter is also slightly less transverse, and more narrowed in front; its width across the base is about a quarter again its length down the middle and very nearly twice the width of its front margin, the sides converge from base to apex with a very gentle curve, the front is nearly truncate, the base bisinuate, and there is an ill-defined wide impression down the hinder part of the middle between which and the lateral margin is a small basal impression on either side.

A single specimen was sent to me from Western Australia by E. Meyrick, Esq.

HOMOTRYSIS.

H. TRISTIS, Germ.

This species (on which the genus *Homotrysis* was founded by Mr. Pascoe) is extremely plentiful in South Australia. I feel no doubt that *Allecula carbonaria*, Germ., is identical with it. The author states that it is extremely close to *tristis*, but is a little larger, with the elytra not wider behind the middle and more deeply striated, and the prothorax more densely pilose. I have specimens, some larger and some smaller than average *tristis*, which display some or all of the other distinctive characters mentioned, but they do not appear to be specifically distinct. The characters of *Homotrysis*, as given by Mr. Pascoe, are very slight; one of them (viz., that the 2nd and 3rd joints of the anterior tarsi are "not longer" than the first) is very puzzling, as I do not know any *Allecula* in which they are longer, and in another sentence Mr. Pascoe speaks of the exceptionally short basal joint of the tarsi in *Homotrysis*.

H. (ALLECULA) FUSCIPENNIS, Blessig.

This is stated by its author to be near *A. carbonaria*, Germ., and is probably congeneric with that species. A comparison of M. Blessig's description of *A. fuscipennis* with Mr. Pascoe's of his *Homotrysis microderes* points strongly to the probability of their being identical specifically, in which case Mr. Pascoe's name must fall; both names were founded on specimens from Victoria. M. Blessig's descriptions, I may remark *en passant*, are models of lucidity, and his brief memoir on Australian *Heteromera* is in all respects admirable. Would that we all exhibited like ability and care!

CISTELA.

C. AUSTRALICA, sp. nov.

Ovalis; ferruginea; prothoracis lateribus et femoribus posticis obscure infuscatis: elytrorum lateribus (postice gradatim latius)

et abdominis lateribus apiceque, nigro-piceis; capite prothoraceque crebre sat fortiter nec rugulose punctulatis; hoc transverso, semi-circulari, angulis anticis nullis, posticis acute rectis, basi late lobato (lobo postice emarginato), fovea parva utrinque ante basin posita; elytris leviter punctulato-striatis, interstitiis sparsim subtilius punctulatis, manifeste transversim rugatis.

[Long. $3\frac{1}{2}$, lat. $1\frac{3}{8}$ lines.

The prothorax is almost a perfect semicircle, the base forming the chord; at a casual glance the puncturation of its surface appears to be somewhat rugulose, but close examination shows that this is not the case. The blackish lateral margin of the elytra is very well defined; at the base it is rather less than a third the width of the whole elytron, but it gradually dilates hindward till its inner margin meets the suture at a distance from the apex equal to about a quarter the length of the elytron, the whole apex thus being of a pitchy black colour.

This insect appears to be a genuine *Cistela*.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

CURCULIONIDÆ.

MYLLOCERUS.

M. FASCIATUS, sp. nov.

Niger; elytris squamis albis instructis, his fascias 2 formantibus (una basali, altera mediana), apice disperse albo-squamosis.

[Long. $2-2\frac{1}{2}$ lines.

The basal two joints of the funiculus together are equal in length to the following five (which are subequal among themselves), the basal being a little longer than the second; the scape nearly equals the whole funiculus, the club nearly equals the preceding four joints; the antennæ are clothed with white hairs. The rostrum is wide and parallel. The prothorax is narrowed in front, is about half again as wide as it is long down the middle; its sculpture is rugose, and a more or less distinct keel runs down the middle. The eyes are slightly oblong.

At once distinguishable from all the hitherto described Australian species of the genus by the conspicuous and well-defined elytral fasciæ formed of white scales.

N. Territory of S. Australia ; collected by Mr. J. P. Tepper.

M. DARWINI, sp.nov.

Piceus, squamis adpressis pallide viridibus (nonnullis piceis intermixtis) confertim vestitus ; rostro brevi lato ; antennarum funiculi articulo basali secundo parum longiori ; prothorace antice vix angustato, quam longiori dimidio latiori ; femoribus omnibus subtus dentatis. [Long. $2\frac{4}{5}$ lines.

The uniformity and pale dead green colour of the scales on this insect (the intermixture of pitchy scales is noticeable only under a strong lens), together with its short broad rostrum, prothorax scarcely narrowed in front, and basal joint of funicle a little longer than the second, will distinguish this species from all its previously described Australian congeners.

N. Territory of S. Australia ; collected by Mr. J. P. Tepper.

LEPTOPS.

L. INSIGNIS, sp.nov.

Piceo-niger, elytris squamis fulvis albidis piceisque (maculatum et vittatum congestis) dense vestitis ; rostro in medio acute carinato, vertice longitudinaliter subtiliter impresso ; prothorace crassissime rugoso ; corpore subtus pedibusque dense griseo-squamosis, his setis griseis vestitis. [Long. (rostr. incl.) 6-8, lat. $2\frac{1}{2}$ -3 lines.

In both the examples before me the head and prothorax are devoid of scales, possibly owing to abrasion, but the specimens appear to be very fresh in other respects. The latter, at its widest is very little more than half as wide as the widest part of the elytra ; it is slightly wider than down the middle it is long, its base truncate, its front margin rather strongly bisinuate. The elytra are punctulate-striate, the punctures in the striæ rather

large, the interstices scarcely convex; the whole surface is densely clothed with scales which form a sharply defined and intricate pattern. The base is narrowly (somewhat more widely about the scutellum), pitchy; immediately behind it is a large transverse irregularly quadrate yellowish-fuscous patch common to both elytra and extending to the 6th stria on each (where it is at its narrowest); this is continued somewhat narrowly down the suture and a little before the hinder declivity spreads out again on either side, and here attains the 4th stria; the scales on the lateral portions (which are much compressed) of the elytra (except in the front part) are greyish in colour, and this tint is widely continued round the apex; the middle portion of the 5th interstice is quite white. The elytra are much pointed at the apex, and the shoulders are laterally prominent in a subdentate fashion. In one example before me several of the elytral interstices are a little costiform, but in the other example this character is absent.

The markings on the elytra resemble those of a *Stenocorymus*, but the strongly cavernous corbels seem to associate this insect rather with *Leptops*, from which I can discover no difference beyond the unusual character of the markings.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

L. BAILEYI, sp.nov.

Oblongus; niger; plus minus sordide squamosus; capite inter oculos et prothorace antice fortiter bituberculatis; huic superficie tota tuberculatim rugosa; elytris tuberculis magnis conicis et nonnullis minoribus 4-seriatim instructis; interstitiis crasse rugulosis.

[Long. (rostro incl.) $7\frac{1}{2}$, lat. $2\frac{1}{2}$ lines.]

The rostrum is about the length of the prothorax and is much dilated at its apex, the surface of which bears on either side a thick arched keel or crest; the tubercles between the eyes are about the same size as the largest of those on the front half of the elytra, and are strongly compressed and longitudinally arched; a

very strong narrow central keel runs from a little behind the frontal tubercles nearly to the apex of the rostrum, but is interrupted between the tubercles; an obscure thick keel on either side connects the tubercles and the apical crests; the scrobes are flexuous and posteriorly obscure. The prothorax is about a quarter wider than long, flattened or slightly concave down the disc with two tubercles (about equal in size to those on the head) narrowly separated at the anterior margin; the whole surface is covered with small shining tubercles of unequal size; the sides are gently arched. The elytra at their base are scarcely wider than the prothorax and are widest about the middle; each elytron bears a sutural row of small tubercles, with a very large tubercle curved backwards at the summit of the declivity, followed by a row of five large tubercles at equal distances apart from base to near apex (the fourth the largest); then a row of four tubercles commencing behind the base, and finally two tubercles, one a little behind the shoulder, the other a little before the middle; the whole surface is coarsely rugulose and furnished with small obscure tubercles. The funiculus of the antennæ is very stout, the club nearly as long as the preceding four joints together, and (at its widest part) considerably wider than the funiculus (the joints of which are all subequal).

From all the previously described species of *Leptops* having interocular tubercles, this species appears to be well distinguished by the two large tubercles on the front of the prothorax. It is probably nearest to *L. musimon*, Pasc., which (besides the difference just mentioned) has the club of the antennæ not thicker than the funiculus, &c., &c.

Taken on Fraser Island and sent to me by F. M. Bailey, Esq., F.L.S., Colonial Botanist of Queensland, with whose name (so widely known among botanists) I have ventured to associate this insect.

L. FRONTALIS, sp.nov.

Ovatus, sat brevis; piceus, squamositate brunneo indutus; rostro unicarinato, scrobe lata postice obscura oculum haud attingente; capite in medio sulcato, inter oculos utrinque tuberculo

compresso instructo; prothorace fortiter transverso, in medio disci late impresso, rude vermiculato-rugoso; scutello vix manifesto; elytris prothorace fere duplo latiori, suturam versus obscure (marginem lateralem versus crasse profunde) seriatim punctulatis, singulatim tricostatis (costa interna postice tuberculis rotundatis consistente, externis subtuberculatis), humeris obliquis valde spinosis. [Long. $4\frac{1}{2}$ - $5\frac{1}{2}$, lat. $2\frac{2}{3}$ - $2\frac{3}{4}$ lines.

Abraded specimens appear to be entirely black. The lateral margins of the upper surface of the rostrum are thickened and convex, so that the rostrum might almost be considered tricarinate; it is the upper apex of these lateral ridges of the rostrum which is raised into a compressed rounded tubercle immediately within each eye. The frontal furrow is concealed beneath squamosity in fresh specimens. The prothorax is nearly twice as wide as long down the middle; its sides diverge from the apex to near the middle, and then are almost straight to the base, and (owing to the extremely coarse vermiculate sculpture of the whole upper surface of the segment), they appear subtuberculate when viewed from above. The distinctness of the tuberculation of the elytral costæ varies, but I have not seen any example in which more than the costa nearest the suture (and that only in its hinder part) is distinctly broken into well-defined tubercles. The shoulders resemble those of a *Catasarcus*. The third joint of the tarsi is very little wider than the second. The second ventral segment is equal to the following two together.

A very aberrant species of *Leptops*, but I can find no structural character of generic importance to separate it.

N. Territory of S. Australia; collected by Mr. J. P. Tepper.

ZYMAUS.

Z. (?) INCONSPICUUS, sp. nov.

Rotundato-ovatus; piceus, squamis brunneis et griseis dense vestitus (his ad latera, et prothoracis elytrorumque utrinque ad basin) vittatim congestis; rostro in medio late fortiter foveato,

fovea in medio carinata, scrobe curvata oculum haud attingente; capite in medio longitudinaliter impresso; prothorace quam longiori fere duplo latiori, leviter canaliculato, vermiculato-rugoso; scutello vix perspicuo; elytris fortiter convexis, subrotundatis, basi vix (in medio fere duplo) prothorace latioribus, obscure sat crasse seriatim punctulatis, interstitiis subinterruptis minus convexis, horum nonnullis postice elevationibus vix tuberculatis.

[Long. 3-4, lat. $1\frac{3}{5}$ - $2\frac{2}{5}$ lines.

In a fresh specimen the sculpture is almost entirely buried under the squamosity, which is of a dull brown colour except a wide lateral vitta (indented three or four times within on the elytra), and a short narrow vitta on either side of the middle common to the prothorax and elytra, which are grey; the squamosity of the underside and legs is greyish rather than brown. But only two of the specimens before me are thus clothed, the rest being older and more or less abraded, and in them the variegation of the surface is not (or very little) noticeable. In a very much abraded specimen the rostrum appears tricarinate above (the lateral carinae being wide and feeble) and it is probable that this sculpture always underlies the squamosity. The eyes are very narrow, vertical and acuminate beneath, the ocular lobes very strong. The triangular apical plate of the rostrum is strongly punctured and concave down the middle. This species has very much the *facies* of a *Cneorhinus*.

The genus *Zymaus* is very briefly characterized by Mr. Pascoe, as follows: "A *Leptope* differt unguiculis connatis." The present species does not bear the slightest resemblance other than structural to his species (*Z. binodosus*), but as I can discover no other structural character than that mentioned by Mr. Pascoe, to distinguish it from *Leptops*, I have no alternative but to call it by the name *Zymaus*.

Northern Territory of S. Australia; in my collection; also taken by Mr. J. P. Tepper.

LIPOTHYREA.

LIPOTHYREA (?) VARIABILIS, sp. nov.

Sat anguste ovalis (♂ ?) vel ovata (♀ ?); picea, squamis viridibus (super squamas cupreas positis) dense vestita; antennarum articulo secundo primo paulo longiore; capite rostroque plus minus distincte longitudinaliter subtiliter canaliculatis; prothorace quam longiori fere duplo latiori, antice angustato, (margine antico fortiter emarginato), postice truncato, in medio canaliculato, lateribus vix arcuatis; elytris postice abrupte declivibus, apice acuminatis (nonnullis exemplis subspinosis), punctulato substriatis, interstitiis 4° 7° et 10° rotundato-convexis.

[Long. $4\frac{1}{2}$ -6, lat. 2-2 $\frac{1}{2}$ lines.

Freshly coloured specimens are uniformly and densely covered with bright green scales which appear to be very easily rubbed off, leaving the surface clothed with slightly shining obscure coppery scales, under which the derm is pitchy black; the legs, when denuded of scales, are of a more or less decided testaceous colour (especially the tibiae); in fresh specimens the sculpture is almost entirely buried under the scales.

This species presents the characters ascribed by Mr. Pascoe to his genus *Lipothyrea*, but appears to differ so much from the species he has described (*L. chloris*), that it is only with hesitation I assign it this place, and it is quite possible that it ought to be the type of a new genus of *Leptopsidæ*. The second joint of the antennal funicle being longer than the first is perhaps a generic character (certainly I think of greater importance in this group than in many), and it is not shared by *L. chloris*. The claws (Mr. Pascoe gives no information concerning those of *Lipothyrea*) are like those of *Leptops*, from which latter genus I hardly know how to separate the present insect structurally (though it differs much in *facies* from every *Leptops* known to me) except by the total disappearance of the *scutellum*. The rostral scrobes might seem to be distinctive, as also the shape of the rostrum itself, but *Leptops* varies in rostral characters.

Northern Territory of S. Australia ; collected by Mr. J. P. Tepper.

OXYOPS.

O. INTERRUPTUS, sp.nov.

Minus brevis ; sat convexus ; niger, parce squamoso-setulosus ; rostro sat elongato, apice dilatato, medio postice carinato ; capite inter oculos fovea parva instructo ; prothorace quam longiori fere dimidio (quam margo anterior fere duplo) latiori, crasse confuse rugoso, medio et utrinque latera versus longitudinaliter depresso, disco pone medium carinato, a basi ad apicem arcuatim angustato ; scutello elongato elevato ; elytris sat elongatis, antice subparallelis, regulariter convexis, lineatim crasse punctulatis, spatia nonnulla rugulosa ferentibus, postice singulatim unituberculatis, humeris externe conico-tuberculatis.

[Long. 7, lat. 3 lines.

The specimen before me (which may possibly be abraded) is thinly and irregularly clothed with small pale scale-like setæ. The sculpture of the prothorax consists of ridges or "wheels," among which are scattered coarse punctures, but the wheels are wanting in three vague longitudinal depressions, the middle one of which bears a carina in its hinder portion. The elytra are here and there strongly rugulose both between row and row of punctures and between puncture and puncture in each row, in such fashion that the non-rugulose portions appear as connected depressions forming on either side (a) a large lateral triangle (with its apex nearly touching the suture, and its base on the lateral margin, containing in its centre a little rugosity) in front of the middle ; (b) a stripe running obliquely backward from about the second row of punctures to the lateral margin ; (c) a vague space occupying the apical area in its half next the suture. The only tubercles on the elytra are a moderately conspicuous one near the apex of the fifth row of punctures and that on the shoulders, which is extremely conspicuous ; it is, however, scarcely convex on its upper surface, but is directed outward, and has a slightly

hooked appearance, though its apex is not sharp. The mesosternal projection is strong and sharp.

N. Territory of S. Australia ; taken by Mr. J. P. Tepper.

O. PARALLELUS, sp.nov.

Minus brevis ; subparallelus ; fusco-ferrugineus, pedibus parum dilutioribus, albido squamoso-setulosus, setulis in elytris fasciam postmedianam formantibus ; rostro sat elongato apice minus dilatato, in medio carinato ; capite inter oculos canaliculato, prothorace quam longiori quinta parte (quam margo anterior plus dimidio) latiori, crasse confuse rugoso, disco depresso in medio fortiter carinato ; scutello minus elongato, elevato ; elytris a basi postice leviter angustatis, sat convexis, fortiter cancellato-punctulatis (interstitiis sat rugulosis), antice bituberculatis, interstitio 3^o pone medium calloso.

[Long. 2, lat. 1 $\frac{4}{5}$ lines.

Much less strongly narrowed behind than is usual in the genus. In fresh specimens the hair-like white scales are condensed upon the rostrum and the middle of the prothorax, on the scutellum, and especially on the elytra behind the middle, where they form a fascia very similar to that of *O. fasciatus*, Boisd. The sides of the prothorax are almost parallel from the base to the middle, where they are rounded, and whence they converge towards the front. The base of each elytron is tumid from the humeral angle to near the scutellum, the extremities of the tumid region being more elevated than the rest (thus forming the two basal tubercles) ; the interstice on which the inner basal tubercle is situated is strongly carinate from a little before to a little behind the beginning of the apical declivity (thus forming the post median callosity), and several of the external interstices become somewhat carinate towards the apex, which consequently has a somewhat undefinedly uneven appearance.

The sculpture and markings of the elytra have a general resemblance to those of *O. fasciatus*, Boisd., compared with which this insect is of a different colour and much narrower and more

parallel, the prothorax much more strongly carinate, with elytra more strongly foveate-punctulate and more strongly tumid near the base and more uneven behind; the mesosternal projection resembles the same in *O. fasciatus*. At a casual glance this species looks much like *Aterpus cultratus*, Fab.

N. Territory of S. Australia; collected by Mr. J. P. Tepper.

O. ARMATUS, sp.nov.

Minus latus, postice sat angustus; piceus, squamis griseis setulosis æqualiter (his nihilominus in scutello et longitudinaliter prothoracis in medio condensatis) minus sparsim vestitus; rostro sat brevi antice minus dilatato; prothorace quam longiori quintâ parte (quam margo anterior dimidio) latiori, sat fortiter ruguloso, postice utrinque leviter longitudinaliter impresso; scutello vix elevato; elytris sat convexis, fortiter seriatim punctulatis, interstitiis alternis leviter carinatis, quinta pone medium leviter tuberculata, humeris lateraliter acute spinosis; mesosterno antice acute producto. [Long. $3\frac{3}{8}$ - $4\frac{2}{3}$, lat. $1\frac{3}{8}$ - $1\frac{1}{2}$ lines.

A very distinct species, well characterized by its uniform grey appearance, with a whitish stripe down the prothorax and continued on the scutellum, while the elytra have no indication of tuberosity except in the fifth interstice being feebly callous behind the middle, and the shoulders having a strong sharp process directed outward.

N. Territory of S. Australia; collected by Mr. J. P. Tepper.

O. LATERITIUS, sp.nov.

Minus brevis; sat convexus; piceo-fuscus, interrupte parce breviter squamoso-setulosus; rostro brevi, lato; capite inter oculos profunde sulcato; prothorace quam longiori vix (quam margo anterior plus tertiâ parte) latiori, a basi ad apicem æqualiter angustato, basi bisinuato, æqualiter crebre subtilius punctulato; scutello elongato elevato; elytris a basi postice sat fortiter angustatis, striatis, striis crasse punctulatis, interstitiis punctulatis vix convexis, interstitio 3° basi calloso, lateribus sat longe pone basin

fortiter tuberculato; femoribus apice fortiter incrassatis; tibiis omnibus intus fortiter denticulatis. [Long. $3\frac{1}{2}$, lat. $1\frac{3}{8}$ lines.

The arrangement of scales on the elytra is a good deal confused; on each elytron there is an oblique fascia-like denuded space immediately behind the middle, immediately in front of, and behind, which the scales are at their greatest density; but these are in no part very conspicuous. The strong conical tubercle close to the lateral margin of the elytra at about a fifth of their whole length from the base, together with the strong (almost angular) dilatation of the inner apex of the femora, and the strong denticulations on the inner face of all the tibiæ, will render this insect easily recognizable. The projection of the mesosternum is obtuse and slight.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

O. MODICUS, sp. nov.

Minus brevis; sat convexus; piceus, antennis pedibusque rufescentibus; rostro brevi sat lato; capite inter oculos sulcato; prothorace quam longiori vix quarta parte (quam margo anterior fere duplo) latiori, a basi ad apicem æqualiter subarcuatim angustato, sat fortiter minus crasse ruguloso, disco depresso in medio carina forti antice abbreviata instructo; scutello sat elongato elevato; elytris striatis, striis crasse fortiter, interstitiis crebre subtilius, punctulatis, his alternis antice convexioribus, humeris externe obsolete prominentibus. [Long. 3, lat. $1\frac{1}{2}$ lines.

The scales on the head are a little condensed, and rather elongate between the eyes; those on the prothorax are evenly distributed and sparse; those on the elytra are much more dense (especially in the apical half), and more or less conceal the sculpture except on a space (more or less interrupted by squamosity) commencing immediately behind the anterior declivity, extending thence backward to about the middle of the elytra and limited laterally by the suture and about the 6th interstice (this is very likely to be the normal state of the insect, as I have two specimens before me thus clothed). The shoulders show a

decided tendency to prominence in a lateral direction,—but cannot be called “tuberculate.”

A very obscure-looking little species, but apparently distinct from everything yet described. The anterior region of the elytra is more strongly than usual (in the genus) declivous towards the prothorax, and the lateral prominence of the shoulders (suggestive of some forms of *Leptops*),—slight but evident in this species,—is exceptional in *Oxyops*. This latter character seems to be unusually prevalent in the species that occur in the Northern Territory.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

O. MACULATA, sp.nov.

Sat lata; supra ferruginea, squamis fasciculatis in tuberculis nonnullis maculatim ornata; subtus picea. [Long. $3\frac{3}{8}$, lat. $1\frac{1}{8}$ lines.

The rostrum is somewhat gibbous near the apex. The head is deeply furrowed between the eyes, the space between the furrow and either eye being clothed with erect long white scales. The prothorax is coarsely rugulose (the base and front of the disc less coarsely than the other parts). The elytra are profoundly foveolate in close rows (the interstices granulate); the shoulders are protuberant laterally in such fashion that viewed from above a slight conical process appears to project beyond the lateral margin on either side; each elytron bears several tubercles which are topped with a conspicuous fascicle of erect white scales; the tubercles are arranged as follows,—on the third interstice an elongate one at the base, a small one before the middle, and a large one just above the posterior declivity,—on the 5th interstice a small one level with the middle one of the 3rd interstice, and another small one near the apex,—on the 9th interstice several small ones. The whole upper and under surface and the legs are thinly clothed with small adpressed white scales. The mesosternal projection is very well-defined and pointed.

Apparently near *O. niveosparsa*, Pasc., (a species I am not acquainted with except by description) but differing in the shape

of the rostrum, in the conspicuous crest of white scales on either side between the eyes, &c., &c. The 2nd joint of the funiculus is nearly as long as the 1st and 3rd (which are equal each to the other) together.

Fraser Island ; sent by F. M. Bailey, Esq., of Brisbane.

MEDICASTA.

M. OBSCURA, sp.nov.

Fusca, griseo-squamulata, squamis in elytris fascias tres obscuras (1^{am} basalem, 2^{am} medianam, 3^{am} subapicalem) formantibus ; rostro in medio sulcato, basi sub-bilobato ; prothorace quam longiori vix latiori, antice angustato, ruguloso, lateribus a basi antrorsum ad medium subparallelis, a medio arcuatim angustato ; elytris prothorace dimidio latioribus, subparallelis, striatis, striis profunde nec crebre punctulatis. [Long. 2½, lat. 1 line.

I think this insect may be referred to *Medicasta*, though it presents some slight structural differences from the species on which the genus was founded ; its general appearance, however, is very similar.

The rostrum is a little longer than the head, its basal portion longitudinally sulcate, the sides of the sulcation convex, clothed with pale setiform scales, and ending somewhat abruptly on the head nearly as far back as the level of the hind margin of the eyes. The antennæ are inserted at a distance from the front of the rostrum about equal to a third of its length ; their scape is less than half as long as the funiculus, and reaches back to about the middle of the eye ; the joints are proportioned much as in the description of *Medicasta* ; the scrobes are as stated in the description of that genus, but hardly extend forward so far as I should expect. The eyes are narrowed at their lower end, but can scarcely be called "acuminati." The underside is clothed rather evenly but not closely with pale setiform scales. The prothorax is densely clothed with rather pale scales, under which its surface appears to be confusedly rugulose. The fasciæ into which the scales on the elytra are collected are not very conspicuous.

The present insect differs from *M. leucura*, Pasc., *inter alia* by the absence of tubercles on the elytra.

Northern Territory of S. Australia ; a single specimen taken by Mr. J. P. Tepper.

BELUS.

B. INSIPIDUS, sp.nov.

Niger, squamulis albidis variegatus ; prothorace canaliculato (canali albedo-pubescenti), fortiter granulato (fere tuberculato) ; elytris crasse profunde subrugulose punctulatis, juxta suturam subdepressis, apice productis attenuatis, punctis parvis albidohirtis confuse ornatis ; subtus sternis et latera versus segmentis ventralibus albedo-hirsutis ; femoribus anticis obscure dentatis.

[Long. (rostr. incl.) $6\frac{3}{8}$, lat. $1\frac{1}{2}$ lines.

Very similar in shape to *B. hemistictus*, Germ., but with the antennæ very much shorter (they scarcely exceed the rostrum in length), the elytra slightly dilated immediately behind the middle, devoid of a carina, much more coarsely sculptured and gently convex longitudinally on either side of the suture, and much more confusedly sprinkled with spots (which are all small) of pale pubescence (these spots being scarcely more concentrated in one part than in another) ; also the underside is marked differently from that of *hemistictus*.

The rostrum is stout, cylindric, arched, shining, and finely punctulate throughout, being rather longer than the prothorax ; the head is very coarsely rugulose-punctulate, the orbits lined with pale pubescence ; the prothorax is at its base a little wider than its length down the middle, bears a wide well-defined longitudinal channel which is clothed with pale pubescence, and is sculptured even more coarsely than the head, the intervals between the punctures being quite tuberculiform ; the scutellum is clothed with pale pubescence. On the underside the median part of the sterna is thinly and the lateral thickly clothed with pale pubescence, the middle part of the ventral segments is glabrous and shining while a large spot of pale pubescence occupies either side of each segment, but these spots are scarcely united one with another into

the form of a vitta. The anterior femora are scarcely distinctly dentate beneath. The pubescence on the specimen before me, which is probably a female, is very pale brown rather than white, but the specimen is not fresh.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

LONGICORNES.

PACHYDISSUS (PLOCÆDERUS) AUSTRALASIÆ, Hope.

The collection made by Mr. J. P. Tepper, near Port Darwin, includes a specimen (♂) of a *Cerambycid* which seems to agree very well with Mr. Hope's description of this insect, except that it is considerably larger ($14\frac{1}{2}$ lines) than the size there mentioned. Considering the tendency of the *Cerambycidae* to vary in size, I think a difference of four lines in length not incompatible with identity. The resemblance of this specimen to *P. sericus*, Newm., is excessively close, except in respect of the antennæ, which are very different, being nearly twice the length of the body, and having their joints differently proportioned; the 3rd joint is nearly half again as long as the 1st, the 4th equal to the 1st, the 3rd and 4th strongly (but not so strongly as in *P. sericus*) swollen towards the apex, the 5th same length as 3rd, the 6th and remaining joints each longer and more slender than the joint next before it.

PHORACANTHA.

P. FALLAX, Pasc.

The size of this species is given by its author as "10 lines." I have a single specimen of that size but the average size is 8 lines.

TRYPHOCHARIA.

The genus *Tryphocharia* bears a considerable resemblance to *Phoracantha*, from which Mr. Pascoe, its author, distinguishes it by the small size of its prothorax in proportion to the elytra, by its more linear femora, its forehead more narrowed in front, its

shorter antennæ, and especially by the spinose joints of the latter bearing *two* spines instead of one only. It may be added that the antennæ have a more or less distinct indication of a twelfth joint.

The genus *Xypeta* (formed by Mr. Pascoe at the same time as *Tryphocharia*, for an insect previously described by him as *Phoracantha grallaria*) appears to differ from *Tryphocharia* only by its forehead wider in front, its longer antennæ, and its shorter anterior and longer posterior legs. There can be little doubt, I should say, that *Phoracantha gigas*, Hope, should be placed in this genus, for though Mr. Hope's *description* gives very little information about the structural characters, the accompanying figure represents it as having long antennæ with two spines on each spinous joint, and posterior femora slender and much longer than those of *Tryphocharia*.

It is very likely that among the species described as *Phoracantha* there may be others attributable to *Tryphocharia*, and possibly to *Xypeta*. The description of *P. acanthocera*, Hope, reads much like that of a *Tryphocharia*, but as it contains no mention of the length of the antennæ, nor of the number of spines on their spinose joints, nor any statement of the size of the insect, no positive conclusion is possible without a re-examination of the type. It is much to be wished that those who possess any of the original types of the Australian species insufficiently described by the earlier authors would publish a full and minute description of the same in the Transactions of some Australian Society.

The following species attributed to the genus *Tryphocharia* I have not seen, and am satisfied are quite distinct from anything known to me, viz., *T. Mitchelli*, Hope; *T. superans*, Pasc.; and *T. Mastersi*, Pasc. The first of these is said to be found in N.S. Wales and Queensland; from the description and figure it would appear to be characterized especially by the very small spine on either side of the prothorax, the elytra distinctly bispinose at the apex, and the markings of the latter, which are of a pale yellow colour, with the base, the suture, the lateral

margins, the apex, and a transverse fascia behind the middle, dark fuscous. It is probable that these markings are variable, but not, I think, to an extent that would bring any species known to me near it. *Phoracantha superans* (from Tasmania) was originally characterized by Mr. Pascoe as having the spinose joints of the antennæ "armed with a spine at the apex," but when that gentleman formed the genus *Tryphocharia*, he placed *superans* in it, from which it would appear that the original description was defective. The sides of the prothorax in this insect are said to bear a slender elongate straight spine, and the elytra to terminate in two long acute spines, and to be of a pale fulvous yellow colour, with the base and margins dark chestnut-brown. The description also states that the elytra gradually decrease in size and proximity as they approach the apex, but this character would appear so improbable that there is doubtless some error in the statement which I conjecture should be read as applying to the words "punctures on the elytra" accidentally omitted. *T. Mastersi* seems to resemble *Odewahni*, but to have the apices of its elytra bispinose, the puncturation of the same less close, and the prothorax tubercled (not spined) at the sides.

The following species of *Tryphocharia* are, I believe, correctly named in my own collection, and some other collections to which I have access.

T. HAMATA, Newm.

♂. (*longipennis*, Hope), said to occur in N. S. Wales, Victoria, and Tasmania. My own specimen is from Western Australia. It (i.e., my Western Australian specimen which, if compared with the original, might possibly prove distinct, though it agrees very well with the description such as it is) is of a rather dark brown colour with an obscure blackish fascia considerably in front of the middle of the elytra,—and the front of the lateral margins, the hinder half of the suture, and a kind of vitta occupying the hinder half of the disc of the same,—obscurely darker than the general colour, the interstices of the punctures (especially in a longitudinal direction) obscurely yellowish. The prothorax and breast are a

good deal clothed with rather long pale brown woolly pubescence, the elytra being thinly sprinkled with pale hairs. The prothorax is the same width (from the base of one spine to that of the other) as it is long down the middle, with its upper surface a good deal flattened, and its sculpture of the character usual in the genus, its lateral spines long, slender and curved towards the elytra. The antennæ reach a little beyond the elytra; their joints from the 4th inclusive extremely flattened (but not carinate on the upper face), joints 3-8 bearing two equal spines (one on each side) at the apex,—all the spines directed hindward rather than outward, and all small, the pseudo-twelfth joint short but rather well defined; the elytra are truncated (rather obliquely) at the apex, each end of the truncation bearing a long sharp spine. The hind tibiæ are a little curved.

T. ODEWAHNI, Pasc.

In his description of this species its author states that its elytra have the apex "rounded," but in a figure (given by him subsequently in the Journal of Ent., Vol. II.) the apices of the elytra are represented as straightly truncate. I have never seen a *Tryphocharia* having rounded elytral apices, but the species that is most plentiful in South Australia (I have specimens from the far west, from Adelaide, and from the Victorian border) has the apices almost straightly truncate with the inner end of the truncation produced in a short sharp spine. The elytra also have an obscure rather large blackish spot on the disc a little in front of the middle, which is represented in the figure of *T. Odevahni* but not mentioned in the description, and which appears to be highly characteristic of the species. In other respects this insect agrees with both description and figure of *T. Odevahni* and, I have no doubt, is that species. It differs from *T. hamata* structurally in having the lateral spine of the prothorax smaller and straight (or nearly so), and the external end of the truncate apex of the elytra not spined. The surface of the prothorax is much flattened. The antennæ scarcely differ from those of *T. hamata* except in being a little shorter, with the pseudo-twelfth

joint less developed. The apical part of the elytra (as in *T. hamata*) is punctured not at all faintly, though very much less coarsely than the front part.

The following species appear to be new :—

T. PRINCEPS, sp.nov.

Robusta; minus parallela; fusca, antennis palpis pedibus elytrisque testaceis, his fasciis ternis (basali, antemediana, et postmediana) fuscis instructis; supra sparsim sat longe albido-pubescentibus; subtus meso- et meta-sternis et segmentorum ventralium parte postica sat dense aureo-pubescentibus; elytris antice fortiter rugulose, postice gradatim subtilius obsolete, punctulatis, apice singulatim oblique truncatis et bispinosis; prothorace leviter transverso, valde ruguloso, tuberculis 4 et spatio mediano lanceolato lævibus instructo, lateribus spina forti instructis; femoribus linearibus.

[Long. 19, lat. 5 lines.

In the specimen before me (which is a female) the antennæ are decidedly shorter than the whole body, and have their joints 3-9 spined on either side (each less strongly than that preceding it), the 2 spines on each joint equal to each other, and much stronger than those of *P. hamata* and *Odwahni*, joints 3-11 carinate above, and the apical part of joint 11 simulating a twelfth joint. The spine on either side of the prothorax is strong, not bent, and very sharp. On the elytra none of the fasciæ quite touch the lateral margins, and only the basal one touches the suture; this (*i.e.* the basal fascia) extends from shoulder to shoulder, and reaches back about an eighth part of the distance to the apex of the elytra (there is a little infuscation not connected with the fascia along the front part of the lateral margin); the antemedian fascia is quite narrow—almost linear—and somewhat of the form *N*; the postmedian fascia is of a lighter brown than the other two, and resembles the antemedian one somewhat in shape, but with a blurred and less defined outline. The elytra are about $2\frac{1}{4}$ times as long as together wide, and about four times as long as the prothorax; they are slightly at their widest behind the middle, and their sides are scarcely perceptibly incurved behind the base.

Allied apparently to *T. Mitchelli*, Hope, the description of which deals with little but colour; that insect, however, is said to be twelve lines in length, and to have a "minute" spine on either side of the prothorax; the description of the markings on the elytra ("variegated with brown spots") is too vague for identification, but, judging by the figure, *T. Mitchelli* has the base suture, lateral margins, and apex infuscate with a single elytral fascia, postmedian, and of very different shape from the postmedian fascia in the present insect. From the other previously described species, its more robust, massive form will at once separate *T. princeps*.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

T. UNGINATA, sp. nov.

♂. Minus robusta; sat parallela; fusca, antennis palpis pedibus elytrisq. testaceis, his maculis ternis (basali antemediana et post-mediana) fuscis instructis; supra sparsim sat longe albido-pubes-cens; subtus meso- et meta-sternis et segmentorum ventralium parte postica sat dense aureo-pubescentibus; elytris antice fortiter rugulose, postice gradatim subtilius obsoletius, punctulatis, apice singulatim recte truncatis et bispinosis; prothorace haud trans-verso, valde ruguloso, tuberculis 4 et spatio mediano lanceolato lævibus instructo, lateribus spina magna acuta hamata instructis; femoribus linearibus. [Long. 18, lat. 5 lines.

The fuscous spots on the elytra are,—a small one at the base on either side of the scutellum, a small one immediately in front of the middle near the suture on either side, and an elongate larger one touching the suture about half-way between the middle of the elytra and the apex. In the specimen before me the antennæ reach back very slightly beyond the elytra; their structure scarcely differs from that of the preceding except in joints 6-11 only being distinctly carinate, joint 9 scarcely spined, and the spines on joints 3-5 much more robust with the inner spine very much feebler than the outer. The general form is distinctly more parallel and less convex than in the preceding, the prothorax

(of course exclusive of the spines), is not at all wider than long down the middle (in *princeps* it is nearly $\frac{1}{4}$ again as wide as long), and the apical truncation of the elytra runs straight across. The large sharp hooked spine on either side of the prothorax distinguishes this species from all previously described except *hamata*, Newm., from which it differs widely in size, colour, &c., &c. The sides of the prothorax are almost perfectly parallel from the base to the anterior constriction, which is very strongly defined. The posterior tibiæ are straight. The outer spines on joints 3 and 4 of the elytra are very much larger than in any other *Tryphocharia* known to me.

Found near Adelaide; rare.

T. PUNCTIPENNIS, sp. nov.

♂. Sat robusta; fusco-brunnea, elytris testaceis, basi summa et sutura postice infuscatiss; prothorace et sterno griseo-sublanuginosis; abdomine breviter pubescenti; prothorace quam longiori vix latiori, fortiter ruguloso, tuberculis 4 obscuris et spatio mediano lanceolato instructo, lateribus spina gracili elongata vix arcuata instructis; elytris punctis fuscis antice magnis rotundatis postice parvis impressis, apice singulatim suboblique truncatis fortiter bispinosis; antennis manifeste 12 articulatis.

[Long. 13, lat. $3\frac{1}{2}$ lines.

The head, prothorax, legs and antennæ are of an almost uniform dark reddish-fuscon colour, the elytra wholly testaceous with the exception of the base and the hinder half of the suture which are narrowly infusate, and the punctures which are dark brown. On the front half of the elytra the punctures are large, round and isolated on the disc becoming evidently smaller towards the suture and lateral margins, on the apical half the punctures are comparatively fine and close but not at all faintly impressed. The antennæ agree in all respects with the description given above of those of *T. hamata* except in having the 12th joint well developed and perfectly distinct from the rest; it is about $\frac{1}{3}$ as long as the 11th joint.

Apart from colour resembles the male of *T. hamata* described above, but with the lateral spines of the prothorax very nearly straight, the punctures of the front part of the elytra different (much more separated from each other by defined intervals), the hind tibiæ very nearly straight, and (especially) the 12th joint of the antennæ as distinct as any of the other joints.

Fowler's Bay; taken by Prof. Tate.

N.B.—A ♀ *Tryphocharia* taken at the same time and place by Prof. Tate is evidently this species though differing from the male as follows: much larger (20 lines), antennæ decidedly shorter than the body with the 12th joint very little developed; prothorax evidently narrowed from base to apex and having shorter lateral spines; elytra less strongly bispinose at the apex, each (in addition to the marking described above) with a large elongate fuscous blotch on the disc a little before the middle (probably this is an individual rather than a sexual character), legs and antennæ testaceous-brown.

COPTOCERCUS.

C. NIGRITULUS, sp.nov.

Nigro-piceus, elytris singulis macula parva antemediana, fascia lata mediana et macula magna apicali instructis; his fere ad apicem fortiter punctulatis, apice emarginato-truncato, truncatura externe fortiter spinosa; prothorace tuberculis 4 nitidis instructis, disco nitide lanceolato-elevato, lateribus obtuse tuberculatis.

[Long. 5, lat. $2\frac{2}{5}$ lines.

The whole insect (except the yellow marks on the elytra, and the palpi which are reddish-brown) is almost unicolorous, the legs and antennæ having only a very slight reddish tone. The puncturation of the elytra is coarse and close at the base, becomes even more so about the middle, and in the apical third becomes closer and less strong to near the apex, and even there it can hardly be called obsolete. The prothorax is not longer than wide. On the elytra there is a very small obscure yellow spot between the margin and the antemedian spot, the postmedian fascia narrows from the lateral margin to the suture but does not quite touch

either, the apical yellow space extends backward to about the level of the commencement of the apical sixth of the suture. The antennæ are considerably longer than the body in the specimen before me, and have their joints 3-7 spined at the inner apex.

A rather short robust species as compared with others of the genus. This character, combined with the nearly black antennæ and legs, the peculiar elytral puncturation and sub-transverse prothorax will distinguish it, I think, from all its Australian allies.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

A. PROSICIUS.

A. INTRICATUS, sp. nov.

Fusco-brunneus, plus minus griseo-tomentosus; elytris antice testaceo-rufis postice testaceo-brunneis, maculis fasciisque non-nulis piceo-nigris notatis, postice fortiter bispinosis; prothorace fortiter ruguloso, macula discoidali lævi, longitudine latitudini æquali. [Long. 12, lat. 2½ lines.

On the elytra the anterior third of the lateral margin is broadly blackish, and the hinder part of this blackish space runs out in a fascia-like manner to the suture; at the middle there is a strongly angulated narrow black fascia, from immediately behind which a black line runs down the middle of the disc about half-way to the apex. The apex of all the femora is black, as also the inner half of the upper face of each of the 4 posterior femora. The whitish hairs are most dense on the prothorax, the apical third of the elytra, and the whole undersurface—on these parts being moderately close, on the rest of the surface very sparse. The interstices of the rugose sculpture of the prothorax are very nitid; on the disc immediately behind the middle is an ill-defined, rounded space on which the rugosity and pilosity both fail, and which consequently appears as a shining spot. There is some indication of a similar spot (as though several interstices coalesced) close to the base on either side of the middle.

This species appears to differ from the Malayan *A. Duivenbodii*, Kaup, *inter alia* in its hispinose elytral apices, in the absence of a glabrous longitudinal line on the prothorax, and in the much more intricately patterned elytra, the apices of which are their most pale-coloured portion. It is an extremely interesting addition to the Australian fauna.

N. Territory of S. Australia; a single male, taken by Mr. J. P. Tepper.

SCOLECOBROTUS.

S. SIMPLEX, sp. nov.

Elongatus, breviter sat dense pubescens; brunneo-testaceus, femoribus posticis 4 apicem versus infuscatis; prothorace quam latiori paullo longiori, antice angustato, transversim æqualiter rugato, ad latera pone medium subtuberculato, disco in medio utrinque minute tuberculato; elytris antice crebre minus fortiter, postice subtilissime obsolete, punctulatis, apice rotundatis.

[Long. 8, lat. $1\frac{2}{3}$ lines.

The head and prothorax of the example before me are a little darker and more reddish than the rest of the surface. This species is closely allied to *S. Westwoodi*, Hope, from which it differs in its smaller size, testaceous brown colour, more sparse pubescence, much finer and closer basal puncturation of the elytra which does not extend so far backward, rounded apices of elytra and infusate hinder four femora.

I am doubtful of the sex of my example; its antennæ are a little longer than the body, with a well-defined twelfth joint, the joints proportioned *inter se* much as in *S. Westwoodi*; they are feebly serrate owing to the apex of each being a little produced within, but the joints have not their inner edge cut into sharp teeth as in *S. Westwoodi*. In all probability the specimen is a female.

N. Territory of S. Australia.

N.B.—A specimen taken by Mr. J. P. Tepper in the Northern Territory may be the male of the above, but it presents slight

differences which suggest its representing a distinct closely allied species. Its prothorax is of a bright *reddish* testaceous colour and is somewhat more coarsely wrinkled transversely, with the dorsal tubercles scarcely traceable, and its elytra are rotundate-truncate at the apex rather than rounded. It is, moreover, a little larger. Its antennæ are similar in length and in the proportion *inter se* of the joints, but they are altogether stouter and much more strongly serrated, though in the same manner as in my specimen and without any trace of the close serration that runs along the edge of each joint in *S. Westwoodi*.

S. VARIEGATUS, sp. nov.

Elongatus, breviter sat dense pubescens; fusco-brunneus; capite, prothorace, antennis, palpis, pedibusque brunneo rufis; elytris nigro adumbratis; prothorace quam latiori sat longiori, antice angustato, transversim æqualiter rugato, ad latera pone medium obtuse tuberculato, disco in medio utrinque minute tuberculato; elytris antice profunde rugulose, postice vix evidenter, punctulatis, apice fortiter bispinosis. Maris antennis corpore paullo longioribus (feminæ corpore paullo brevioribus), ut *S. Westwoodi* conformatis.

[Long. $10\frac{3}{4}$, lat. 2 lines.

The hinder four-fifths of the elytra are clouded with blackish immediately within the lateral margin. The front part of this dark vitta is much the deepest in colour and is dilated so as nearly to reach the suture (in some examples more nearly than others), extending nearly (or quite) over the hinder half of the rugosely punctured space.

Port Lincoln, S. Australia; on flowers of *Eucalyptus*.

ANTEROS.

This genus (characterized in 1845 by M. Blanchard on an undescribed Australian species) is probably identical with *Agapete* (characterized by Mr. Newman in the same year). The diagnosis agrees very well with specimens of *Agapete* before me,—mentioning the very peculiar shape of the elytra and other characters.

At first sight it would appear as if the phrase "tarses à 1^{er} article très court" were inconsistent with this supposition,—since the basal joint of the tarsi in *Agapete* is decidedly longer than the 2nd; but the force of this objection disappears when it is borne in mind that the basal joint is decidedly shorter than the following two together, and that the genera with which M. Blanchard associates *Anteros* have the basal joint at least equal to the following two (that immediately after which M. Blanchard places it,—*Callisphyris*,—has that joint much longer than the 2nd and 3rd together). Thus compared the basal joint in *Agapete* would naturally be called "very short."

PARMENOMORPHA, gen. nov.

Gen. *Parmenæ* affinis, sed oculis crasse granulatis.

The description of *Parmena* in Lacordaire's Gen. des Col. ix. p. 275, exactly fits the small insect for which I propose this new name, with the single exception that the eyes (instead of being "subfinely") are extremely strongly and coarsely faceted. The presence of a small, well-defined, triangular scutellum, and of a small sharp spine on either side of the prothorax, together with the smaller size of the basal ventral segment (very distinctly shorter than the following two together), will separate it from *Correstetha*, the strong sinus of the intermediate tibiæ from the Malayan *Dasyerrus*, the prothoracic spines from *Bybe*.

P. IRREGULARIS, sp. nov.

Testaceo-ferruginea, capite prothoraceque obscurioribus; dense breviter pubescens et capillis longis erectis sparsim vestita; antennis (♂. ?) corpore longioribus, sat robustis; capite prothoraceque rugulosis nec dense nec crasse punctulatis; hoc utrinque pone medium spina laterali parva gracili instructo; elytris lateribus basique fortiter nec crebre, disco crassissime sparsim, punctulatis. [Long. 3, lat. 1 line.

The sculpture of the elytra is not unusual in the *Dorcadionidæ*—the inner middle part of the disc bearing a few very coarse

punctures, while the remaining space is considerably more closely and less coarsely punctulate.

N. Territory of S. Australia ; taken by Mr. J. P. Tepper.

MICROTRAGUS.

M. JUNCTUS, sp.nov.

Angustus ; cinereo-variegatus, squamis nigrescentibus capillisque nigris intermixtis: prothorace rugoso ; elytris 4-costatis, costis externis apicem juxta, internis pone elytrorum medium, connectis. [Long. 6, lat. 2 lines.

Head strongly convex ; prothorax not wider than down the middle long, its base and apex equal (the former bisinuate with the middle rather strongly angulated), its sides somewhat rounded and furnished behind the middle with a strong sharp projection the apex of which is scarcely bent hindward, its surface very convex and coarsely but not closely rugulose ; elytra with their humeral spines strong, sharp and bent, the four costæ (i.e., two on each elytron moderately strong and serrate rather than tuberculate, the inner pair meeting on the suture about two-thirds of its length from the base, the external pair meeting on the suture close to the apex, the space between the inner pair much flattened, the whole surface of the insect covered with rough dirty-looking brown scales mingled (especially along the costæ) with blackish scales and thinly sprinkled with rather long erect black hairs.

McDonnell Ranges, Central Australia ; taken by Mr. A. W. S. Wild.

LYCHROSIS.

M. Lacordaire [Gen. Col. IX. (2) p. 541] questions the generic identity of the two insects (one from Australia, the other from Sylhet), which Mr. Pascoe associated in this genus, and proceeds to furnish a diagnosis somewhat fuller than Mr. Pascoe's. The Australian *L. luctuosus* does not altogether fit that diagnosis,—especially I do not find that the scape of the antennæ is of the peculiar form M. Lacordaire describes,—and it is very likely that

the learned French author is right in thinking that two generic names are required. In that case the new name will have to take the place of *Lychnosis*, Lacord., as Mr. Pascoe founded his genus on the Australian species, for which, therefore, the original name must be retained.

I may add that I have before me several specimens of *L. luctuosus*, Pasc., taken by Mr. J. P. Tepper, near Port Darwin, which vary considerably in size ($4\frac{2}{3}$ -6 lines), and also in markings, some of the white spots on the elytra showing much tendency to run together into connected lines.

HATHLIODES.

H. GRAMMICUS, Pasc.

Mr. Tepper's collection of *Coleoptera* from the N. Territory contains examples of a very variable species that appears to be this insect. The grey lines running down the elytra mentioned in the description of the type are seldom very distinct, and sometimes quite untraceable, the whole surface being then evenly clothed with whitish pubescence. Abraded specimens (and judging by their frequency the pubescence seems to be very deciduous) are of an uniform shining ferruginous colour. In very fresh specimens the antennæ are evenly clothed with fine whitish pubescence, and their darker colour near the apex (mentioned in the description) is not noticeable. The length varies from $5\frac{1}{2}$ lines to 8 lines. Several of the specimens before me have traces of oblique striæ running between feeble rounded carinæ down the elytra (scarcely evident except in the apical half), and they may possibly represent a distinct species,* but I can find no other character to distinguish them. The abruptly (*i.e.*, suddenly) narrowed apex of the elytra, not drawn out to a long point as in *H. lineella*, nor sub-emarginate as in *H. 4-lineata*, but separately obtusely pointed (in some examples separately rounded off with

*Possibly *H. moratus*, Pasc. The sharpness of the apex of the elytra seems to vary both in the striated and non-striated specimens.

scarcely a point), with the extreme apical margin thickened, seems to distinguish this species from all its North Australia congeners—unless *H. murinus*, Pasc., in the description of which the elytral apices are not characterized, and which is not known to me.

H. LACTEOLA, Hope.

In the above-mentioned collection there are also specimens of an insect which agree so well with the description of *H. lacteola*, Hope, that I can hardly doubt their identity with it. They belong, however, to *Mycerinopsis*, having antennæ considerably longer than the body in the male, and the intermediate tibiæ formed as in the *Apomecynides*. It must be near *M. uniformis*, Pascoe, from which, however, the elongate strongly narrowed apex of its elytra would seem to distinguish it. I may say that the specimens before me are all somewhat more *yellowish* in colour than Hope's description would lead one to expect, but they are all more or less abraded, and there are unabraded portions here and there quite decidedly of a milky white. Their size varies from 4 lines to 6 lines.

PHYTOPHAGA.

PSEUDOTOXOTUS, gen. nov.

Palporum maxillarium articulus ultimus oblongo-ovalis, apice obtusus.

Ligula membranacea, antice fortiter emarginata.

Oculi mediocres, rotundati, sat fortiter convexi, fortiter granulati.

Caput minus elongatum, postice manifeste angustatum.

Antennæ corpori longitudine æquales (♂.?) vel vix æquales (♀.?), ante oculos positæ, articulo ultimo appendiculato.

Prothoracis latitudo maxima juxta basin posita.

Coxæ anticæ anguste separatæ, intermediæ subcontiguæ.

Femora postica vix incrassata, apicem versus fortiter angustata, parte angustata acute dentata.

Corpus totum dense pubescens.

Differs *inter alia* from *Megamerus* in the shape of the apical joint of the maxillary palpi, from *Cheiloxena* in the nondentate sides of the prothorax, from *Duboulaia* in the strongly convex eyes, from *Prionesthis* in the dentate hind femora, from *Carpophagus*, *Diphanops*, *Mecynodera*, and *Ametalla* in the long antennæ, and from *Polyoptilus* in the dense clothing of pubescence.

P. LINEATA, sp.nov.

Sat elongata; ferruginea; dense albido-pubescens; elytris costis 3 vel 4 latis obscuris instructis; his nonnihil denudatis, postice obsoletis. [Long. 4-6, lat. $1\frac{1}{5}$ - $1\frac{3}{5}$ lines.

The structure of the head and its organs is almost exactly as in *Polyoptilus Lacordairei*, Germ. The surface is entirely clothed with dense whitish hair beneath which it appears to be finely punctulate. The basal joint of the antennæ is about equal to the third,—joint 2 short, 3 twice 2, 4 nearly twice 3, 5 scarcely longer than 4, 6 equal to 5, 7-11 successively longer, the appendiculate part of 11 very short. The prothorax closely resembles that of *Polyoptilus* in structure, the suture between the pronotum and prosternum running (as in that genus) on the underside but appearing more conspicuous; the prothorax is as long as wide, its greatest width immediately in front of its base, its sides concave in the middle, and convergent in the extreme front, so that a little behind the front the segment is not much narrower than at its widest; there is a denuded and slightly elevated narrow line (abbreviated at both ends) running down the middle; the angles are all obsolete. The elytra are not at all punctulate-striate but (as far as I can observe under the dense pubescence) are rather closely punctured with a confused mixture of large and small punctures; three or four ill-defined wide rounded costæ originate at or near the base but do not extend much beyond the middle of the elytra hindwards (very similar costæ exist in *Polyoptilus Lacordairei*), which are almost devoid of pubescence and thus show a ferruginous colour in contrast with the nearly white pubescence, giving the elytra the general appearance of being nearly white with several obscure wide reddish longitudinal vittæ in the anterior

two thirds of their length. The legs are extremely like those of *Polyoptilus*, but are a little longer (especially the tarsi) and more slender. The prosternal process, though very narrow (like a knife-edge) distinctly separates the coxæ and bends down hindward, (visibly from behind); the mesosternal process on the other hand, can scarcely be traced distinctly between the intermediate coxæ,—thus reversing the structure of *Polyoptilus* where the intermediate coxæ are more distinctly separated than the anterior. The basal ventral segment is rather more than twice the length of the next two together.

The resemblance of this insect to a *Toxotus* is most extraordinary.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

DITROPIDUS.

D. PALMERSTONI, sp. nov.

Late ovatus; æneus; labro, antennarumque articulis primis sex fulvis; articulo 1° robusto, 2° subgloboso, 3° elongato, 4°-6° sat brevibus; capite prothoraceque crebre fortiter punctulatis; elytris punctulato-striatis, interstitiis planis (externis vix convexis) crebre minus subtiliter punctulatis. [Long. $1-1\frac{1}{2}$, lat. $\frac{4}{5}-1\frac{1}{5}$ lines.

A very wide almost semicircular species; the even, close and very strong puncturation of the head and prothorax, together with the rather close and strong confused puncturation of the elytral interstices, without any transverse strigosity, will distinguish it from all others bearing a general resemblance to it. Probably *D. laminatus*, Chap., is its nearest ally from which it differs *inter alia* in the clypeus not being bidentate (at least not in the specimen before me), in the prothoracic puncturation being by no means "aciculate," and in the even punctulate striation of the elytra.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

IDIOCEPHALA.

The following species I believe to be *Aporocera catoxantha*, described by Mr. Saunders on specimens from Port Essington.

Herr Suffrian has already pointed out that the species in question is probably inseparable from *Idiocephala*. I have a good many specimens before me, of which one only agrees with the description exactly in respect of colour and shape of markings.

I. CATOXANTHA, Saund., var. (?)

Oblongo-quadrata; flava vel ferruginea; antennis (maris corpore vix longioribus feminae brevioribus), tibiis apice et tarsis picescentibus; elytris (spatio communi γ simulante et marginibus lateralibus ipsis exceptis) cyaneis; capite prothoraceque crassissime nec crebre punctulatis; illo longitudinaliter plus minus conspicue canaliculato; elytris fortiter subseriatim punctulatis. [Long. $2-3\frac{2}{5}$, lat. $1-1\frac{3}{5}$ lines.

The γ -like mark on the elytra is very coarse and thick (as though daubed on with a coarse brush), the extremities of its arms nearly reaching the humeral callus on either side, and its foot being at the apex of the suture.

N. Territory of S. Australia; taken by several collectors.

I. PURA, sp.nov.

♂. Breviter oblongo-quadrata; flavo-rufa; antennarum articulis 6 ultimis et prothoracis margine basali summo nigricantibus; scutello elytrisque læte cyaneis; capite prothoraceque fortiter nec crebre, elytris crebre fortiter vix seriatim, punctulatis; tarsorum apice subinfuscato. [Long. $1\frac{2}{5}-1\frac{3}{5}$, lat. $\frac{4}{5}-1$ line.

N. Territory of S. Australia; collected by Mr. J. P. Tepper.

I. PALMERSTONI, sp.nov.

♂. Breviter oblongo-quadrata; rufa; antennis apicem versus, metasterno, abdomine, et scutello, nigris; elytris cyaneo-nigro variegatis capite leviter obscure, prothorace sparsim nec fortiter, elytris sat fortiter sat crebre subrugulose vix seriatim, punctulatis. [Long. $1\frac{1}{5}$, lat. $\frac{4}{5}$ line.

The dark markings on the elytra are as follows: a blotch shaped like a subequilateral triangle with the front margin of the

elytra as its base, and its apex on the suture a little behind the middle, a narrow edging to the hind part of the suture, and (on either side) a blotch of similar shape and size to that already mentioned, having as its base the hinder two-thirds of the lateral margin, and its apex falling on the suture a little behind the middle. Thus if the dark colouring be regarded as the ground tint of the elytra, there would appear to be on each elytron a broad subparallel red stripe running from the lateral margin (immediately behind the base) obliquely almost to the suture, and a red spot on the inner apical extremity not quite touching the suture.

The undersurface is thinly clothed with short silvery hairs.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

APOROCERA.

The following species agrees sufficiently well with the description of *A. apicalis*, Saund., (from N. S. Wales), to prevent my giving it a new name. It appears to differ chiefly in the colour of the ventral segments (which in some examples is almost wholly red), in the elytra being narrowly margined in front with black, and in the scutellum not being margined with black.

A. APICALIS, Saund., var. (?)

Elongato-quadrata; rufa; antennis (late compressis, corpore brevioribus), elytrorum basi anguste et apice late, pygidio apice, metasterno, abdomine (vel toto vel in parte), femorum et tibiæ apice, tarsisque, nigricantibus; capite prothoraceque crassissime acervatim, elytris profunde seriatim sat crebre, punctulatis.

[Long. 3, lat. 1½ lines.

The punctures on the head and prothorax are extremely large and deep; they are placed on the anterior part of the former, and on the latter are almost confined to the oblique depressions usual in this genus, which run from near the front of the lateral margins to near the middle of the base. The dark apical cloud on the elytra occupies nearly the posterior quarter of those

organs. The second joint of the antennæ is of a paler colour than the rest.

N. Territory of S. Australia ; collected by Mr. J. P. Tepper.

TERILLUS.

T. MICANS, sp.nov.

Oblongus ; convexus ; obscure fuscus vel piceo-ferrugineus, æneo- vel viridi-micans ; antennis ferrugineis ; capite, prothorace, et corpore subtus, pilis brevibus vestitis ; capite obscurius, prothorace crebre fortiter rugulose, elytris profunde crebre nec rugulose nec seriatim, punctulatis. [Long. 3-3½, lat. 1½-1¾ lines.

The general colour is a kind of pitchy ferruginous much shot with pale greenish iridescence on the underside, the head and the prothorax. The general colour of the elytra is of a more decidedly ferruginous tone than that of other parts of the body and their iridescence is coppery rather than green ; the antennæ are entirely ferruginous ; the legs vary from dark ferruginous to dark piceous in colour, the femora in many examples being æneous, and the tarsi rarely as darkly coloured as the tibiæ. The puncturation of the head is close, rather fine, and very rugose, but much obscured by a clothing of short adpressed shining grey hairs. The separation of the clypeus from the front is hardly traceable. The basal joint of the antennæ is moderately stout, the 2nd much more slender and a little more than half as long, the 3rd more slender still and about equal to the 1st in length, the 4th and following joints scarcely longer, the apical four a little compressed and dilated. The prothorax is a little less than half again as wide as long, the base a little less than half again as wide as the front margin, the sides rounded (not at all angulated) with their edges appearing crenulated owing to the rugosity of the puncturation of the surface, the hind angles acute, the front angles little marked. The scutellum is finely and not closely punctulate. The surface of the elytra is quite free from rugosities, and shows scarcely any indication of transverse sculpture in any light, its puncturation

being close, deep, and well-defined. The basal joint of the hind tarsi is a little longer than the second. The tibiæ are canaliculate externally, the channel (of the hind tibiæ especially) being very deep and wide at the apex.

N. Territory of S. Australia ; taken by Dr. Bovill.

T. POLITUS, sp.nov.

Oblongus; convexus; fuscus, viridi-læte micans; labro antennis pedibusque testaceo-ferrugineis; capite prothorace et corpore subtus pilis brevibus vestitis; capite crebre rugulose, prothorace profunde crebrius nec rugulose (hoc quam longiori vix dimidia parte latiori), elytris profunde crebrius nec rugulose vix seriatim, punctulatis; his sat manifeste transversim rugatis; interstitiis apicem versus vix convexus. [Long. 2 $\frac{1}{2}$ lines, lat. 1 $\frac{3}{4}$ lines.

A very pretty species; on the head and prothorax the testaceo-fuscous ground colour is almost lost in the brilliant green iridescence, which, on the elytra, is almost confined to the interior surface of the large fovea-like punctures, though in some examples it is somewhat diffused over the base and apex. On the underside the green iridescence is strongest on the prosternum and becomes gradually less noticeable hindward; in some examples the prosternum might almost be called "metallic green" without any qualification.

From *T. micans* the non-rugulose puncturation of the prothorax will distinguish this insect; from *T. porosus*, Jac., (which it seems to resemble rather closely) it differs *inter alia* in the prothorax being much less than twice as wide as long. From both it differs considerably in size.

N. Territory of S. Australia; taken by Mr. J. P. Tepper, &c.

T. CARINATUS, sp.nov.

Oblongus; convexus; fusco-testaceus, plus minus viridi-micans; capite prothorace et corpore subtus pilis brevibus vestitis; capite prothoraceque crebre rugulose (hoc quam longiori vix dimidia parte latiori), elytris fortiter crebrius subseriatim, punctulatis; his

minus perspicue transversim rugatis, longitudinaliter (parte tertia antica excepta) carinatis. [Long. $2\frac{4}{5}$, lat. $1\frac{1}{5}$ lines.

In this species the green gloss that more or less pervades the whole surface does not anywhere overpower the testaceous underlying tint, though it is variable in respect of its intensity and distribution, being usually most conspicuous about the lateral and sutural margins of the elytra. In size and shape it resembles *T. politus*, but differs (apart from colour), in the prothorax having a fairly defined dorsal channel, in the punctuation of the same being strongly rugulose and in the sculpture of the elytra, which in front is a little more inclined to run in rows and a little more inclined to rugulosity, but in the hinder two-thirds falls into a perfectly longitudinal arrangement with well-defined and strongly convex interstices; from *T. porosus* the small size, and prothorax much less than twice as wide as long, will distinguish this insect.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

COLASPIS.

C. PALMERSTONI, sp.nov.

Oblonga; sat convexa; subtus picea; supra purpurea, cupreomicans; labro, antennis basi, tibiis, tarsisque (nonnullis exemplis pedibus totis) rufescentibus; supra sat fortiter, sat æqualiter, crebre subrugulose punctulata. [Long. $2\frac{4}{5}$, lat. 1 line.

The separation between the clypeus and the front is scarcely marked, the latter having an obscure transverse impression (in some examples *very* obscure) near its anterior margin. The prothorax is slightly more than a third again as wide as long, the base not very much wider than the front margin; the lateral borders are rather wide and diverge rather strongly from the front angles (which are moderately sharp and prominent) to behind the middle where they round off strongly and converge to the base which is widely and roundly produced backward, the hind angles being minute and dentiform; the curve of the base is slightly bisinuate; the lateral margins are slightly undulous and feebly

angulated in some examples (in some not symmetrically on the two sides), in other examples their lateral curve is scarcely sinuate.

I see no reason to regard this insect as other than a true *Colaspis*. The anterior margin of its prothoracic episterna is not convex, the claws are appendiculate, the tibiæ not emarginate externally, the prosternum is truncate behind, the lateral borders of the prothorax (in some examples at least) are distinctly and subangularly undulous, the basal joint of the hind tarsi is equal to the following two together, the antennæ are slender and a little more than half the length of the body, with the apical joints only very slightly compressed. The hinder four tibiæ are channelled externally, the channel being deepened at the apex where the tibia is decidedly dilated, its external apical angle being well-defined and the apex itself obliquely truncate.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

AGETINUS.

A. *ÆQUALIS*, sp.nov.

Ovalis; nitidus; æneus; antennis fuscis, basi testaceis; pedibus testaceis, tibiis tarsisque plus minus infuscatis; capite prothoraceque subtilius, elytris sat fortiter, crebre punctulatis; his vix manifeste quadri-costatis; interstitiis subtiliter sparsim punctulatis. [Long. 2, lat. 1½ lines (vix).

The elytral puncturation has scarcely any tendency to run in rows and is close and moderately strong, the interstices among the punctures having a distinct system of very fine and sparing puncturation; the elytral costæ are scarcely raised above the surface and would probably be quite untraceable were not the puncturation more or less interrupted by them. In some examples the underside is of a decided green colour. The sides of the prothorax are nearly straight and show no trace of dentation or unevenness.

Judging from M. Boisduval's very succinct description of his *A. (Colaspis) Australis* the present species differs from it in not being of a copper-colour, and in the hind body not being ferruginous,

—but as the size of *Australis* is not stated and the only information given (besides the description of colour) is that the upper-surface is everywhere punctulate, it is likely enough that there are many other points of difference. *A. æqualis* is much smaller than the other previously described species of *Agetinus*; as compared with *A. corinthus* and *subcostatus*, moreover, the sculpture of its elytra is altogether finer and smoother. I have not seen *A. jugularis*, Er., but from the description that insect appears (apart from size) to differ from *A. æqualis*, *inter alia*, in having the underside of the head rufous and the sides of the elytra transversely rugose.

N. Territory of S. Australia; taken by Mr J. P. Tepper.

SCELODONTA.

S. SIMONI, Baly.

Among the specimens collected in the Northern Territory by Mr. J. P. Tepper is an example of this genus which appears to be too close to *S. Simoni* to be wisely described as new; nevertheless it differs from the description of that species in having the elytra and the sides of the prothorax marked with some rather conspicuous golden spots, and it is probable that if it were placed side by side with Mr. Baly's insect, it would be found to differ in other respects. This spotted var. (if it be a var.) may perhaps not unsuitably be distinguished by a local name; I shall therefore propose to call it var. ? *Palmerstoni*. It may be noted that in Mr. Masters' "Catalogue of Australian Coleoptera" the generic name *Scelodonta* is omitted, making *S. Simoni* appear as a *Tomyris*.

RHYPARIDA.

R. ÆNEO-TINCTA, sp. nov.

Elongato-ovata; nitida; rufa; capite, prothorace antice, elytrorum regione suturali antice, meso- et meta-sternis, femoribusque æneo-viridi-micantibus; antennis (basi excepta), tibiis tarsisque fuscis; capite prothoraceque subtiliter coriaceis; clypeo distincte

minus crebre, vertice prothoraceque leviter sparsim, punctulatis; scutello subtiliter coriaceo impunctulato; elytris sat fortiter (postice levius) punctulato-striatis, interstitiis sparsim subtiliter punctulatis; femoribus posticis inermibus. [Long. $3\frac{2}{3}$, lat. $1\frac{1}{2}$ lines.

The æneous colouring on the prothorax is confined to the front where it is obscure and cloudy. The separation between the clypeus and front is indicated only by the difference in puncturation. There is a distinct longitudinal sulcus between the eyes which in front meets a very ill-defined curved transverse impression. The prothorax is a little more than half again as wide as long, its sides are rather strongly rounded, and its apical margin is considerably narrower than the base. The minutely coriaceous surface of the head and prothorax renders them sub-opaque; the elytra are very nitid. The green colouring is at its brightest on the elytra, where it occupies the whole space between the fourth striæ on either side extending backward nearly half-way to the apex.

N. Territory of S. Australia; a single specimen taken by Mr. J. P. Tepper.

R. MADIOPICTA, sp. nov.

Elongato-ovalis; nitida; rufa; antennis basi, mandibulis, genibus, tibiis apice, et tarsis, piceis; elytris æneo-nigris, margine laterali antice et sutura (antice plus minus anguste, postice subito late sed interrupte) rufis; clypeo sat fortiter sat crebre, vertice leviter sparsim, prothorace vix manifeste, punctulatis, scutello impunctulato; elytris fortiter (postice multo levius) punctulato-striatis; interstitiis vix manifeste punctulatis; femoribus posticis inermibus. [Long. $3\frac{3}{4}$, lat. $1\frac{1}{2}$ lines.

var. Elytris nigris vix subæneis, margine basali, et sutura margineque laterali antice, anguste rufis.

The rufous colouring on the elytra is extremely variable. The extreme basal margin and the anterior two-fifths of the suture appear to be always rufous, but in some examples much more narrowly than in others; at two-fifths of the length of the suture the rufous colouring spreads out into an elongate-oval spot, which

nearly or quite reaches the apex, but at about three-fifths of its length the suture becomes dark again and appears as a narrow stripe dividing the hinder part of the rufous spot; the anterior three-fifths of the lateral margins also are rufous,—in some examples rather widely (especially towards the front), in others very narrowly. Of the antennæ the basal three joints (and in some specimens the base of the fourth) are rufous; the palpi are tipped with piceous. The clypeus is separated from the front by a transverse furrow, and the latter bears a longitudinal furrow. The prothorax is slightly more than half again as wide as long; its sides are nearly straight in their hinder two-thirds, then a little rounded and converging to the apex; the base is about a third again as wide as the front margin; the angles are all acute and pointed outward.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. AMPLICOLLIS, sp. nov.

Ovata; nitida; rufa; genubus nigris; elytris regione suturali antice late subæneis, latera versus nonnullis exemplis longitudinaliter æneo-notatis; clypeo fortiter sat crebre, fronte sparsim subtiliter, prothorace fortius nec sparsim (antice subtiliter, ad latera ipsa vix distincte) punctulatis; scutello fere impunctulato; elytris sat fortiter punctulato-striatis, striis internis antice leviter impressis, interstitiis subtilissime punctulatis; femoribus posticis inermibus.

[Long. $3\frac{3}{8}$, lat. $2\frac{1}{6}$ lines (vix).

A very short wide insect. The clypeus is separated from the front by a well-defined furrow, the latter being longitudinally channelled. The prothorax is very nearly twice as wide as down the middle it is long; its sides are strongly rounded, its angles all acute and pointed outward; its base about a third wider than its front margin; the marginal portion of the surface all round (most widely at the sides) is nearly without punctures; on the punctured space thus enclosed the punctures are quite strong and close on the sides but become somewhat finer towards the middle. On the elytra the striæ are scarcely impressed except near the sides

and apex, the punctures in the striæ being, however, much finer towards the apex than in front.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. PUNCTULATA, sp.nov.

Sat late oblonga; nitida; fusco-rufa; clypeo crebre fortius, fronte crebre subtilius, prothorace disco fortiter sat crebre latera versus etiam magis fortiter crebre, scutello obscure, punctulatis; elytris antice punctulato-striatis, postice sublævibus; femoribus posticis subtus leviter dentatis. [Long. 3, lat. 1½ lines.

The clypeus is separated from the front by a transverse furrow and the latter bears a short longitudinal channel anteriorly. The prothorax is rather small in proportion to the elytra; its width is rather more than half again its length; sides gently rounded; all the angles acute, the anterior unusually produced in a forward and outward direction, the base not much more than a fifth wider than the front. The striæ on the elytra are scarcely impressed but bear strong and rather close punctures, both striæ and punctures being nearly effaced in the hinder half; the interstices are rather sparingly but very distinctly punctured. The tooth on the underside of the hind femora is not much more than an angulation of the outline a little before the apex.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. POSTICALIS, sp.nov.

Elongato-ovata; minus nitida; fulva; capite inter oculos (nonnullis exemplis) elytrorum sutura (antice anguste, postice late dilatatum), meso- et meta-sternis (parte media excepta) et (nonnullis exemplis) femoribus plus minus evidenter, obscure viridibus; antennis (basi excepta) piceis; capite leviter sparsim, prothorace scutelloque vix manifeste, punctulatis; elytris subtilius sat æqualiter punctulato-striatis, femoribus posticis inermibus.

[Long. 3½, lat. 1½ lines.

The suture is narrowly greenish (in some examples scarcely so in the extreme front) to about the middle where the green

colouring begins to dilate and forms an elongate-oval spot extending to the apex and reaching laterally to about the fifth stria on either side. The clypeus is continuous with the hinder part of the head, which bears an elongate notch-like impression between the eyes. The prothorax is about twice as wide as long, its base nearly twice as wide as its front margin, sides straight, front angles acute, hind scarcely so. The interstices of the striæ on the elytra are not punctured. The whole insect has a semi-opaque appearance on the upper surface, and is minutely coriaceous.

N. Territory of S. Australia; taken by Mr. J. P. Tepper; also in my collection.

R. PICEITARSIS, sp.nov.

Sat late oblonga; nitida; fusco-testacea; antennis basi excepta, genubus (obscure), tarsi, et abdominis apice fusco-nigris; clypeo sparsim fortiter, fronte prothoraceque vix manifeste, punctulatis; elytris sat subtiliter (postice etiam magis subtiliter) punctulato-striatis; femoribus posticis inermibus. [Long. 2 $\frac{3}{8}$, lat. 1 $\frac{1}{2}$ lines.

The clypeus is continuous with the hinder part of the head which is finely canaliculated longitudinally. The prothorax is two-thirds wider than long down the middle, its base a little wider than the front margin, the sides rather strongly rounded, all the angles acute and pointed outward. The interstices of the striæ on the elytra are very finely and moderately thickly punctulate. The extent of dark colouring on the ventral segments is variable, being extended in some examples over more than the apical half.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. UNIFORMIS, sp.nov.

Elongato-subovata; nitida; cyanea; antennis basi et pedibus (nonnullis exemplis femoribus tarsisque piceis) rufis; capite (clypeo paullo magis fortiter) prothoraceque sparsim subtiliter (hoc nonnullis exemplis vix perspicue) punctulatis; scutello

subtiliter coriaceo ; elytris (antice sat fortiter, postice gradatim subtilius) punctulato-striatis ; femoribus posticis inermibus.

[Long. $3\frac{1}{2}$, lat. $1\frac{3}{8}$ lines.

? hujus speciei var. *Ænea*, punctis in elytrorum striis majoribus et magis remotis.

The clypeus is continuous with the hinder part of the head, which bears a longitudinal furrow ; this furrow deepens and widens forward, being more or less forked at its apex, so that in some specimens there appears to be a pseudo-separation from the clypeus all the more apparent in occasional specimens with the clypeal puncturation a little stronger than usual. The prothorax is about half again as wide as long and is nearly twice as wide at the base as across the front margin ; the sides are scarcely rounded, the anterior angles acute and pointed outward, the posterior scarcely so. The interstices of the striæ on the elytra are sparingly and very finely punctured.

I do not feel sure that the "var. ?" mentioned above is not a very closely allied distinct species ; in addition to the differences already specified the sides of the prothorax are a little more rounded.

N. Territory of S. Australia ; taken by Mr. J. P. Tepper.

R. HERBACEA, sp.nov.

Late ovalis, postice sat angustata ; minus nitida ; supra subtiliter coriacea ; viridis ; antennis (basi rufa excepta), tarsisque, piceis ; labro, prothorace, scutello, pro- et meso-sternis, nonnullis exemplis metasterno latera versus, coxis, femoribus, tibiisque, rufis ; capite leviter, prothorace levissime, sparsim punctulatis ; scutello impunctulato ; elytris subtiliter (postice etiam magis subtiliter) punctulato-striatis, interstitiis haud punctulatis ; femoribus posticis inermibus.

[Long. 3, lat. $1\frac{3}{8}$ lines.

The clypeus is continuous with the hinder part of the head which bears a longitudinal fovea deepening and widening forward. The prothorax is nearly twice as wide as long, its base nearly twice as wide as its front margin, front angles acute, hind scarcely so,

sides straight. The rather light green, silky appearance of the elytra gives this species a very distinctive appearance. In some examples the scutellum is more or less tinged with green.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. SATELLES, sp.nov.

Late ovalis; sat nitida; rufa; antennis (apicem versus) tarsisque piceis; elytris, abdomine (apice plus minus rufescenti excepto) et nonnullis exemplis metasterno plus minus late, cyaneis vel viridibus; clypeo sparsius subfortiter, fronte, prothorace scutelloque vix manifeste (sub lente forti sparsim subtilissime) punctulatis; elytris distincte (postice gradatim subtilius) punctulato-striatis; femoribus posticis inermibus. [Long. 3, lat. 1½ lines.

The clypeus is continuous with the hinder part of the head, which bears a longitudinal channel more or less foveiform in front. The prothorax is nearly half again as wide as long, and its base is half again as wide as its front, all the angles acute and pointed outwards, sides gently rounded (most strongly in front). The head, prothorax and scutellum are finely coriaceous and sub-opaque, the interstices of the striæ on the elytra scarcely visibly punctured.

Resembles the preceding but is less narrowed behind, with the sides of the prothorax rounded, elytra nitid, &c.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

R. DISCOPUNCTULATA, sp.nov.

Lata; ovata; nitida; cyaneo-nigra; clypeo, labro, palpis, antennis, pedibusque plus minus rufescentibus; clypeo fortiter rugulose, fronte crebre distincte, prothoracis disco fortiter crebre, punctulatis; elytris sat fortiter punctulato-striatis; femoribus posticis inermibus. [Long. 2½, lat. 1½ lines.

The clypeus is not truly separated from the front by a transverse furrow, but a longitudinal channel running down the latter spreads out in front in a manner that gives somewhat the appearance of a dividing furrow. The prothorax is nearly

twice as wide as long, its base not half again as wide as its front margin, the front angles (though small) acute and pointed outward, the hind hardly so, the sides gently rounded; the puncturation is very strong and rather close, and is mixed with a very different system of faint sparse punctures; the coarse puncturation does not extend to the edges of the surface, being completely surrounded with a rather narrow strip on which there is only the shallow sparse puncturation scarcely visible save under a strong lens. The scutellum is impunctate. The striæ of the elytra are scarcely impressed in front, but their punctures are there large and deep; hindward the striæ become more distinctly impressed and the punctures finer; the interstices are rather closely and distinctly (though finely) punctulate.

N. Territory of S Australia; taken by Mr. J. P. Tepper.

R. MOROSA, Jac.

I have before me several examples from the N. Territory which *may* be this insect. They agree fairly well with the description but are scarcely so *widely* ovate as I should expect, and are *greenish*- (not *bluish*-) black in colour. In all probability they represent a distinct species but if so it is one that it would not be wise to name without a comparison of specimens, and I therefore abstain from naming it.

R. INTERIORIS, sp. nov.

Ovata; nitida; testaceo-rufa; clypeo sat fortiter rugulose, fronte sparsius obscure, prothorace sat fortiter subrugulose, punctulatis; elytris (antice distincte, postice obsolete) punctulato-striatis; femoribus posticis vix subdentatis.

[Long. $1\frac{3}{8}$, lat. $\frac{4}{8}$ line.

In the example before me the head, prothorax, and all the underside (including the coxæ) are of a decidedly *reddish* tone, the antennæ, elytra, and legs being pale testaceous, but probably the shades of colour might vary in other specimens. The clypeus is continuous with the hinder part of the head, which bears a very fine longitudinal impressed line. The prothorax is about half

again as wide as long, its base not much wider than the front margin, all the angles are acute, the sides rather strongly rounded. The elytral striæ are scarcely impressed in front, but are very distinctly set with rather small punctures; towards the apex both striæ and punctures are subobsolete; the interstices are quite devoid of puncturation.

The eyes are large and less separated than usual in the genus, the interval between them being less than the length of their shortest diameter. The apical five joints of the antennæ are more incrassated also than usual. The hind femora are not really dentate, but the attenuation of the apical portion is very sudden, so that the outline at this point is subangular. The hinder part of the head is a little tumid in appearance.

This and several other species in my collection appear to me very doubtfully congeneric with typical *Rhyparida*,—but they are at least closely connected with insects that have been attributed to the genus (*R. minuta*, Jac., e.g.), and present all the essential characters,—prothoracic episterna not convex,—posterior four tibiæ emarginate near external apex, and claws well developed and bifid.

I obtained a single specimen on Eucalyptus at Leigh Creek, about a hundred and fifty miles north of Port Augusta.

The following tabulation of the species of *Rhyparida* described above will perhaps be useful:—

A. Hind femora unarmed.

B. Sides of the prothorax more or less rounded.

C. Clypeus not separated from the front by a distinct furrow.

D. Puncturation of prothorax not (or scarcely) defined.

E. Elytra wholly testaceous; size small... *piceitarsis*.

EE. Elytra wholly cyaneous or æneous.

F. Prothorax and elytra unicolorous... *uniformis*.

FF. Prothorax red..... .. *satelles*.

- EEE. Elytra testaceous with green
markings *ceneotincta*.
- DD. Puncturation of prothorax very strong *discopunctata*.
- CC. Clypeus separated from the front by a
well-defined fovea.
- D. Antennæ (except at base) black or
nearly so..... *mediopicta*.
- DD. Antennæ wholly red or fuscous red... *amplicollis*.
- BB. Sides of the prothorax quite straight.
- C. Elytra entirely green..... *herbacea*.
- CC. Elytra fulvous with greenish marking.... *posticalis*.
- AA. Hind femora toothed..... *punctulata*.
- AAA. Hind femora scarcely toothed ; size under
2 lines (i.e. much smaller than any of the
preceding..... *interioris*.

AUGOMELA.

A. ACERVATA, sp.nov.

Oblonga; convexa; pernitida; supra viridi-aurea, violaceo-variegata; subtus violacea, viridi-aureo-variegata; elytris seriatim punctulatis, seriebus medianis confusis; prothorace acervatim punctulato. [Long. 3½ lat. 2 lines.

On the upper surface the violet colour is spread over the back of the head, the greater part of the thorax except the front and sides, and a vitta-like space down the middle of each elytron (commencing at a distance from the front equal to a fifth of the whole length) which is strongly dilated in its front part; the violet spaces are all edged with pure green. The head is strongly and rather closely punctured; the puncturation of the prothorax is strong and rather close but condensed in patches, not however more conspicuous on the sides than on the disc; on the elytra the rows of punctures are more or less confused on the violet discal space; the interstices are impunctate. On the underside the

greenish golden colour is confined to the sides and middle of the prosternum and is not always present. The legs are of a deep violet colour, the antennæ blackish with their base pitchy testaceous.

N. Territory of S. Australia ; collected by Mr. J. P. Tepper and others.

N.B.—The above insect would seem to differ by its less rounded form from the hitherto described species of *Augomela*, which it approximates however by the style of its colouring and markings and by the form of its claws, as also of its prosternum ; its antennæ resemble those of *Calomela*. Possibly some authors might consider it the type of a new genus, but I think no great violence is required to associate it with *Augomela*.

CALOMELA.

C. APICALIS, sp.nov.

Lata ; oblonga ; convexa ; nitida ; rufa ; antennis (basi excepta) nigro-piceis ; elytris (margine laterali excepta) cyaneo-nigris, puncturis violaceis ; abdomine (segmento apicali excepto) cyaneo vel viridi ; elytris subseriatim, prothorace acervatim, punctulatis.
[Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

The general colour of the elytra is black with a scarcely perceptible bluish tone, but the punctures, though fine, are evidently of a decided blue. The head is rather strongly (but not coarsely) punctured in front, nearly smooth behind. The prothorax is very coarsely punctured at the sides and has some connected clusters of finer punctures about the base and the middle of the disc. The elytra are finely punctulate, the punctures scarcely running in rows except near the apex (where they are very faint).

This species must resemble *C. cingulata*, Baly, from N.W. Australia, but differs *inter alia* in the elytra not being "*cyanea*," or in the least *striated*, and in the colour of the ventral segments which are entirely metallic green or blue save the front margin of the basal segment and the whole of the apical one which are

bright red. I have five specimens before me all quite identical. Even if it be a local var. of *C. cingulata* it seems deserving of a name.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

C. PUNCTIPES, Germ.

This species is generally regarded as a form of *Curtisi*, Kirby, but I am unable to consider it so. I have before me a long series from widely separated parts of S. Australia which show very little variety *inter se* but invariably differ from typical *Curtisi* in having the prothorax wider and shorter with its disc much more coarsely punctured. Their differences *inter se* are almost confined to variations in the markings of the prothorax. I believe *C. punctipes* to be a good species.

C. DISTINGUENDA, sp.nov.

Oblonga; convexa; sat nitida; rufa; antennis (basi excepta) tarsisque piceis; elytrorum vitta discoidali (antice abrupte dilatata), femoribus externe et tibiis cyaneis; capite antice crasse postice subtiliter sparsim, prothorace ad latera crasse disco subtilius acervatim, punctulatis; elytris subtilius punctulatis, puncturis latera et suturam versus seriatim dispositis, illic crassioribus.

[Long. $2\frac{4}{5}$, lat. $1\frac{3}{5}$ lines.

Allied to *C. Curtisi*, Kirby. Compared with it the prothorax is not quite so short and is decidedly more thinly punctulate on the disc; the elytra are much more finely punctulate and bear a differently shaped vitta, which is much narrower, and is abruptly dilated in front on its inner side; and the underside, scutellum and thorax are entirely rufous, while the tibiæ are wholly cyaneous.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

C. TARSALIS, sp.nov.

Lata; oblonga; convexa; sat nitida; testacea vel rufo-testacea; antennis (basi excepta) tibiis apice et tarsis nigris; elytris regulariter seriatim, prothorace crasse (præsertim lateribus), capite crasse confuse, punctulatis.

[Long. 3, lat. $1\frac{1}{5}$ lines (vix).

The puncturation of the prothorax is strong and by no means sparse on the disc, and becomes close and extremely coarse on the sides. The punctures in the rows of the elytra are rather large and strong and somewhat quadrate in shape; the interstices are not convex, and are sparingly and very finely punctured.

Allied to *C. pallida*, Baly, and *geniculata*, Baly, both of which, however, are narrow insects with the disc of the prothorax finely punctured, the former having the legs entirely testaceous and the latter having black knees.

CHALCOMELA.

C. EXIMIA, Baly.

A few specimens agreeing very well with the description and figure of this insect were taken by Mr. J. P. Tepper near Palmerston (N. Terr.). Its precise habitat has not I think been known with certainty hitherto.

AMPHIMELA.

A. AUSTRALIS, sp. nov.

Late ovalis; vix perspicue punctulata; nitida; nigra; prothorace latera versus late testaceo; antennis basi pedibusque plus minus picescentibus. [Long. $1\frac{2}{3}$, lat. $\frac{1}{2}$ line (vix).

The antennæ are scarcely so long as the head and prothorax together, joint 1 long and stout, 2 subglobular, 3 slender and nearly as long as 1, 4-6 short, 7-11 much wider and forming a cylindrical club. The antennæ are inserted very far apart and close to the internal margin of the eyes. The head bears a longitudinal furrow on either side close within the eye, and an obscure median fovea. The eyes are large, rather coarsely granulated, and very convex. The prothorax is about three times as wide as long, very strongly convex transversely, narrower in front than behind, its anterior lateral portion consisting of a large tumid projecting lump which is cut off from the rest of the segment by a deep oblique sulcus; the hind angles are obtuse, the base strongly

lobed backward all across; the testaceous margin on either side is wider than the black central portion; under a powerful lens the surface is seen to be lightly and sparingly punctulate and to bear on either side near the margin an oblique furrow running forward from the base, the portion outside this furrow being tumid. The scutellum is minute and strongly transverse. The elytra are at their widest in front of the middle where they are a third again as wide as the prothorax, of which they are about four times the length; they are rather attenuate towards the apex and are very strongly and sinuately contracted externally from a little behind the shoulder (apparently in order to accommodate the enormously developed hind femora). Their puncturation resembles that of the prothorax but with the addition here and there (especially towards the sides) of some rather stronger punctures. The anterior coxæ are strongly prominent, and almost contiguous, with their cavities closed behind.* The hind femora are as largely developed as in *Arsipoda*, and are unarmed; the hind tibiæ are somewhat flexuous, and are strongly channelled and denticulate on their external margin, and mucronate at their apex; their tarsi are inserted slightly above the apex (feebly after the manner of *Psylliodes*) and have the basal joint equal in length to the remaining three together; the claws are appendiculate. The basal ventral segment is very strongly sulcate down the middle (this latter character probably sexual).

This remarkable little *Halticid* seems to be certainly very close to the East Indian *Amphimela* (of which I have never seen a type) though probably different enough to justify generic separation. Its agreement with *Amphimela* in the extraordinary position of its antennæ renders it convenient to refer it for the present to that genus which M. Chapuis (its author) regards as constituting a distinct "groupe" of the *Halticides*.

A single specimen sent by F. M. Bailey, Esq., and taken by him near Brisbane.

* I feel practically certain that this is the case, although I have not been able to dissect a specimen; the example described is in a fairly satisfactory condition for examination.

NISOTRA.

N. UNICOLOR, sp. nov.

Ovata; nitida; testacea; antennis (basi excepta) piceis; capite impunctato; prothorace subtilissime, elytris sat fortiter, crebre punctulatis, his disco obscure subtiliter 3 vel 4 costatis, latera versus sat fortiter longitudinaliter sulcatis. [Long. 2; lat. $1\frac{1}{2}$ lines.

The prothorax is quite twice and a half as wide as it is long down the middle; its sides are rather strongly rounded and sinuous immediately behind the prominent front angles, which gives them a slightly outward direction; there is a curved impression on either side near the lateral margin; the anterior and posterior longitudinal impressions are rather feeble. The pseudo-costæ on the elytra are little more than very fine lines appearing paler than the general colour, and interrupting the puncturation which is moderately strong and scarcely tending to a linear arrangement; the lateral sulcus on each elytron is strong, but does not extend much beyond the middle.

A very distinct species. The entirely different colour will at once separate it from its Australian congeners.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

HALTICA.

H. AUSTRALIS, sp. nov.

Supra nitida, cærulea; subtus cyaneo-nigra, breviter pubescens, antennis tibiis tarsisque fusco-piceis; capite inæquali, inter antennas longitudinaliter carinato, vix evidenter punctulato; prothorace quam longiori paullo latiori, pone medium transversim sat fortiter sulcato (sulco margins laterales attingente), disco vix evidenter ad latera sparsim subtiliter punctulato; scutello lævi; elytris crebrius subtilius punctulatis. [Long. $2\frac{1}{2}$ - $2\frac{3}{8}$, lat. $1\frac{1}{2}$ lines.

Extremely like the European *H. pusilla*, Duf., from which it differs as follows:—the antennæ are stouter and (with the tibiæ and tarsi) are of a more brownish colour; the prothorax is

longer in proportion to its width, and is a little more narrowed in front; the eyes also are a little more prominent.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

H. IGNEA, sp.nov.

Supra nitida, igneo-cuprea, prothorace obscure viridi-iridescente; subtus obscure æneo-picea, breviter pubescens, antennis pedibusque fusco-piceis; capite inæquali, inter antennas longitudinaliter carinato, vix evidenter punctulato; prothorace quam longiori parum latiori, pone medium transversim sat fortiter sulcato (sulco margines laterales attigente), disco vix evidenter ad latera sparsim subtiliter punctulato; scutello lævi; elytris crebrius subtilius punctulatis, latera versus sulco longitudinali sat fortiter impresso.

[Long. $3\frac{3}{8}$, lat. $1\frac{3}{8}$ lines (vix).

The elytral furrow is strong and conspicuous, commencing just behind the humeral callus and reaching to about the middle of the elytra. This furrow, together with the even longer prothorax and different colour, will distinguish this species from the preceding which in other respects it closely resembles.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

H. FERRUGINIS, sp.nov.

Testaceo-ferruginea; antennis (basi excepta) tarsisque piceis tibius (anticis 4 leviter, posticis conspicue) et femoribus posticis apicem versus (nonnullis exemplis vix manifeste), infuscatis; capite inter oculos longitudinaliter postice canaliculato antice obscure carinato; prothorace quam longiori dimidia parte latiori, basin versus transversim sat fortiter sulcato (sulco margines laterales attingente), vix perspicue punctulato; scutello lævi; elytris crebre subtilius (nonnullis exemplis subrugulose) punctulatis.

[Long. $3\frac{1}{8}$, lat. $1\frac{1}{8}$ lines.

N. Territory of South Australia; taken by Mr. J. P. Tepper.

N.B.—The preceding three species all seem to agree perfectly with *Haltica* (*Graptodera*) and I fail to find any character on which

to regard them as belonging to a distinct genus. As stated above, *H. Australis* placed side by side with *H. pusilla* appears very close even specifically.

DIBOLIA.

D. TEPPERI, sp.nov.

Ovalis; convexa; nitida; ferruginea (certo visu supra viridimicans); capite prothoraceque rufo-æneis; elytris femorumque posticorum apice fusco-æneis; prothorace subtiliter transversim strigoso; elytris duplo-punctulatis, haud striatis.

[Long. $2\frac{1}{2}$, lat. $1\frac{3}{5}$ lines.

The eyes are very large, and nearly meet on the summit of the head. The elytra are very finely and very closely punctulate (this puncturation only visible under a powerful lens) and also provided with a system of less fine and less close (though actually fine and close) puncturation; they have no trace of longitudinal striæ. The prothorax is across its base about twice and a-half again as wide as it is long down the middle, its sides are nearly straight, its base is slightly bisinuate.

Allied to *D. Duboulayi*, Baly (from Western Australia) but differing *inter alia* in its larger size, its wholly ferruginous antennæ but little infusate towards the apex, and its non-striate elytra.

N. Territory of S. Australia; taken by Mr. J. P. Pepper.

OIDES.

O. TEPPERI, sp.nov.

Flava; antennis mandibulis tibiisque (basi excepta), tarsis totis, et abdomine plus minusve, piceis vel nigris; elytris parte posteriori macula elongata magna cyanea ornatis; cap. postice longitudinaliter canaliculato, inter oculos transversim impresso, leviter obscure punctulato; prothorace quam longiori duplo latiori, antice et postice leviter transversim impresso, subtiliter sparsius punctulato; elytris subtiliter sat crebre punctulatis.

[Long. $3\frac{1}{2}$ -4, lat. $1\frac{1}{2}$ -2 lines.

The basal two joints of the antennæ are entirely flavous, the following two are more or less infusate or piceous towards the apex, the rest black; the fourth joint is a little longer than the third. The hind body is infusate to a variable extent, in some specimens the infuscation being confined to the middle part of the basal two or three segments while in others it suffuses the whole of the ventral segments except the last, leaving, however, a flavous margin down either side.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

O. SOROR, sp.nov.

Flava; antennis mandibulis tibiisque (basi excepta), et tarsis totis piceis vel nigris; elytris singulis (marginibus suturali laterali apicalique exceptis) cyaneo-nigris; capite postice longitudinaliter canaliculato, inter oculos transversim impresso, obscure subcrasse punctulato; prothorace quam longiori minus duplo latiori, inæquali, crebre sat fortiter punctulato, antice et postice transversim, et alibi, impresso; elytris crebre subtilius punctulatis.

[Long. 3½, lat. 2 lines.

The antennæ are coloured as those of *O. Tepperi*; the third and fourth joints are of equal length, the second very evidently shorter. The blue-black colouring on the elytra occupies the whole surface except a narrow border running entirely round each of them except at the base where it is wanting.

Several species of *Oides* more or less resembling this insect have been described from Australia and elsewhere, from all of which the combination of characters mentioned above will, I think, distinguish it. Of Australian species it is no doubt nearest to *O. circumdata*, Baly, in which, however, the second joint of the antennæ is as long as the third, and the prothorax is *finely* punctulate; *O. lætabile*, Clark, has the hind body black and the lateral yellow margin not reaching the apex.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

O. SILPHOMORPHOIDES, sp. nov.

Flava, vel flavo-fusca; antennis mandibulisque (basi excepta), et elytris vitta lata submarginali (neq basin nec apicem attingente) postice gradatim dilatata, piceis; capite longitudinaliter subtiliter canaliculato et inter oculos transversim impresso, minute coriaceo et punctis majoribus obscuris sparsim impresso; prothorace quam longiori plus duplo latiori, antice et postice transversim (et utrinque longitudinaliter) impresso, capiti similiter punctulato; elytris crebre minus subtiliter punctulatis.

[Long. $3-3\frac{3}{4}$, lat. $1\frac{1}{2}$ lines.

The tarsi of this species are scarcely infuscate. Of the antennæ joints 1 and 2 are testaceous, 3-6 increasingly stained with piceous, the rest entirely piceous; joint 2 is short, 3 and 4 equal. On the prothorax the sublateral longitudinal impressions connect the ends of the transverse impressions, so that an oblong transverse discal space, is enclosed. The elytra, as compared with those of allied species, are rather strongly punctured, the head and prothorax exceptionally feebly. The insect bears a considerable superficial resemblance to a *Silphomorpha*.

AULACOPHORA.

A. PALMERSTONI, sp. nov.

Supra testacea vel fulva, antennis (basi excepta) et labro infuscatis; subtus (capite prothorace et abdominis apice fulvis exceptis) nigra, dense sat longe albido-pubescent; tibiis apice et tarsis vix infuscatis; capite vix evidenter punctulato; prothorace quam longiori vix dimidia parte latiori, medio fortiter transversim sulcato, latera versus subfortiter punctulato; elytris crebre subtiliter punctulatis.

♂. Antennarum articulo primo modice triangulariter dilatato, abdominis segmento apicali trilobato, lobo intermedio oblongo-quadrato, profunde concavo, apice emarginato.

[Long. $3-3\frac{3}{4}$, lat. $1\frac{1}{2}$ lines.

A furrow runs across the head from eye to eye which is much stronger in the female than in the male. From between the bases of the antennæ a smooth ridge runs down the middle of the clypeus nearly to its apex.

N. Territory of Australia; taken Mr. J. P. Tepper and others.

A. AUSTRALIS, sp.nov.

Sat nitida; capite prothorace scutello elytrisque flavis; basi fascia lata suturam fere attingente et macula magna subapicali nigra instructis, apice ipso anguste piceo; subtus flava abdomine apicem versus et metasterno nigris; antennis (basi excepta) tibiis tarsisque infuscatiss; capite vix evidenter, prothorace (medio transversim fortiter sulcato) latera versus crebrius fortius, elytris subtilius minus crebre punctulatis.

♂. Antennarum articulis 3° (leviter) 4° 5°que (valde) dilatatis; abdominis segmento apicali longitudinaliter 4-sulcato, inter sulcos interstitiis convexis.

The basal black spot (or fascia) on the elytra occupies the anterior quarter extending from the lateral margin almost to the suture, its hinder and inner edges being irregular in outline; the hinder black spot is scarcely smaller than the basal one, and almost touches the lateral margin, being well separated from the suture, with its front edge a little behind the middle of the elytron. The basal joint of the antennæ is moderately elongate, the second short, third about equal to 1st (in the male somewhat dilated), fourth slightly shorter than third (in the ♂ strongly dilated and acuminate at the extero-apical angle, fifth in male dilated as strongly as fourth than which it is much shorter,—in female similar to fourth and scarcely shorter,—the remaining joints gradually and slightly (in both sexes) increasing in length and decreasing in thickness.

I have met with this insect in various localities near Adelaide, and have received specimens from N. S. Wales (from Mr. Sloane). It appears to be a common species, but I cannot discover any description of it among the numerous described forms of the genus.

In some respects it agrees with the description of *A. cartereti*, but the antennæ of that species are said to be as long as the body, the hinder black mark on the elytra is said to be "at the extremity," and the underside and legs are said to be "yellow" without any parts thereof being excepted,—in none of which respects does the present species agree with the description.

AGELASTICA.

A. IMPURA, sp.nov.

Elongato-ovalis, postice vix ampliata; rufo-fulva; capite (antennas includente), abdominis segmentis (ultimo excepto) in medio, femoribus (anticis totis, intermediis basi ipsa excepta, posticis dimidia parte apicali), tibiis, tarsisque, nigris; prothoracis disco infuscato; elytris violaceo-cæruleis; prothorace impunctato obscure bifoveolato; elytris sat crebre punctulatis. [Long. 3, lat. 1½ lines.

The antennæ are nearly as long as the body, rather robust, the 2nd joint short, the 3rd twice as long, the 4th and following joints much longer still.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

A. MELANOCEPHALA, Baly.

I have received from several collectors in the Northern Territory specimens of an insect which appears to be this species. It is not quite clear from Mr. Baly's description, however, whether in the phrase "*capite nigro*" he includes the antennæ (the colour of which is not specially mentioned). Those of the species before me are black.

RUPILIA.

R. IMPRESSA, sp.nov.

Rufa vel ferruginea; antennis tibiis tarsisque piceis vel piceo-nigris; elytris cyaneis cupreo-iridescentibus; nonnullis exemplis sutura rufa, nonnullis abdomine supra et subtus genubusque piceo notatis; capite inæquali, postice longitudinaliter fortiter canaliculato, obscure sat crasse punctulato; prothorace quam longiori

fere dimidia parte latiori, antice quam postice paullo latiori, inæquali, trans medium impresso, subtiliter nec crebre punctulato, disco in medio fere lævigato, margine antico in medio vix evidenter (postico sat fortiter) emarginato, lateribus fere rectis; scutello sat magno, fovea magna circulari impresso; elytris crebre subtilius punctulatis, disco sulco longitudinali lato impresso.

[Long. 4, lat. 2 lines.

I refer this insect to *Rupilia* with some hesitation on account of the structure of its tibiæ and antennæ, the former being bi-canaliculate externally with the interval between the channels strongly costiform, and the latter being quite $\frac{2}{3}$ the length of the body with the apical joints scarcely dilated and the shortest of them (8-10) very decidedly longer than wide. I do not know of any characterized genus presenting these features, but as the specimens before me agree very well with *Rupilia* in other respects, I do not think it necessary to give them a new generic name. *Cydippa* seems to want the external keel of the tibiæ and to differ widely in the style of colour and markings, while the specimens before me seem to resemble the described species of *Rupilia* in the latter respects.

The colour of the elytra is peculiar being a rather dull blue with a kind of iridescence which in certain lights makes them appear reddish violet or coppery; their sutural apex reaches to about the base of the antepenultimate segment of the hind body while (owing to the obliquity of the truncation of their apical margin) the external apex is on a level with the base of the penultimate segment (these measurements may not be quite exact as all the specimens before me are much distorted). Immediately behind the base of each elytron and a little within the humeral callus a wide longitudinal depression commences, and extends to near the apex, appearing as though the whole substance of the elytron were indented; the limits of this depression are not defined but it occupies the whole middle half of the organ. I am doubtful of the sex of the specimens before me. The transverse furrow across the middle of the prothorax is much more conspicuous in some examples than in others.

From *Rupilia ruficollis*, Clark, which this insect must resemble rather closely, it would seem to be distinguished *inter alia* by the uniform colour of the antennæ, the much finer puncturation of the elytra, by the depressions on those organs and by that on the scutellum.

N. Territory of S. Australia; taken by Prof. Tate and by Mr. J. P. Tepper.

MENIPPUS.

M. MACULICOLLIS, sp. nov.

Oblongus; robustus; undique pube aurea adpressa vestitus; fuscus vel ferrugineus; vertice in medio, prothorace ad latera antice et basi in medio, elytris latera apicemque versus, scutello, antennis, mandibulis apice, femoribus maculis nonnullis, tibiis, tarsis, et meso-metaque sternis ad latera, nigro-piceis; capite prothoraceque confuse obscure (hoc antice latera versus distincte sat crebre), scutello elytrisque crebre subfortiter, punctulatis; capite postice longitudinaliter canaliculato; prothorace quam longiori duplo latiori, antice late fortiter transversim arcuatim sulcato, marginibus antico et postico leviter subangulatim emarginatis, lateribus (sulci transversi incisura) pone medium emarginatis; antennis longitudine corporis dimidio æqualibus, sat validis.

[Long. $4\frac{1}{2}$, lat. $2\frac{1}{2}$ lines.

The characters of this insect seem to agree very well in all respects with those attributed to *Menippus*. The colour of the elytra varies a good deal, the ground tint in dark specimens being so pitchy as to obscure the markings; in the darkest specimen before me the elytra are of an almost unicolorous pitchy black. The short golden pubescence with which the insect is clothed is spread over the whole surface including the legs and antennæ but seems to be very deciduous on the head and prothorax which in most of the examples before me are nitid and almost glabrous.

The black spots on the head and prothorax will distinguish this species from *M. cynicus*, Clark, also from *Galeruca semipullata*, Clk., which latter moreover seems to have simple claws since

Mr. Clark attributes it to *Galeruca* on the same page on which he distinguishes *Menippus* from that genus by its claws not being simple.

N. Territory of S. Australia; taken by Dr. Wood and Mr. J. P. Tepper.

MONOLEPTA.

M. TEPPERI, sp. nov.

Elongato-oblonga; sat parallela; fusco-testacea; antennis, tibiis tarsisque piceis; prothorace femoribusque flavo-(magis quam fusco-) testaceis; elytris disco longitudinaliter infuscatis, spatio infuscato nec basin nec apicem attingente; supra sat æqualiter subtilius crebre obscure punctulata. [Long. 2½, lat. 1 line.

The head is transversely grooved behind the insertion of the antennæ between which an obscure keel takes its rise and runs forward for a short distance. The antennæ are unfortunately broken in both the specimens before me, but are probably a little more than half the length of the body; the basal joint is elongate and gently thickened towards the apex, its extreme base being testaceous, its remainder dark shining brown; joints 2-4 are dull pitchy black, 2 short, 3 longer, 4 longer still; the rest are wanting. The prothorax is subquadrate, a little more than a half wider than long, the sides but little rounded, the front subtruncate, not much narrower than the base which is rounded. The scutellum is triangular and rather small. The vitta-like infuscation on the disc of each elytron leaves a narrow lateral, and a wide sutural, pale margin. Only the apex of the pygidium is exposed. The basal joint of the posterior tarsi is slightly longer than the following three together; the posterior tibiæ are armed with a long spine; the anterior coxal cavities are closed; the elytral epipleuræ wide near the base and quite obscure beyond the middle.

Appears to be allied to *M. dimidiata*, Jacoby, (from Cape York) but differs from it structurally in the pygidium being almost covered by the elytra.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

EURISPA.

E. MAJOR, sp.nov.

Piceo-nigra; supra (capite obscuriore excepto) testacea, abdomine medio rufescenti; prothorace quam latiori tertiâ parte longiori, ante medium constricto, crasse profunde punctulato; elytris punctulato-striatis, vix evidenter quadricostatis, apice valde productis, spinosis; unguiculis nullis. [Long. 4½-5, lat. 1 line (vix).

The anterior constriction and large deep puncturation of the prothorax, and the sculpture of the elytra (which are punctulate-striate, with all the interstices subcostate,—4 of them slightly more strongly and widely than the others) will distinguish this species from all its previously described congeners.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

EROTYLIDÆ.

THALLIS.

The species of this genus seem to be rather more widely distributed than most of the Australian *Coleoptera*. I have found at Port Lincoln *T. janthina*, *compta* and *vinula* described by Erichsen on Tasmanian specimens, also a species which does not appear to differ from *T. Erichseni*, Crotch (described from N. S. Wales), and another which I take to be *T. insueta*, Crotch (described from Rockhampton, Queensland). The insect last mentioned displays all the strongly marked characters which led Mr. Crotch to hesitate in referring *insueta* to *Thallis*, and is similarly coloured (though a little more brightly than the description would lead one to expect); it differs, however, in having the prosternum a little more prominent behind the coxæ and a little less coarsely sculptured in front than that of *T. insueta* is said to be, but I do not think it can be regarded as a distinct species,—at least without an actual comparison with the type.

EPISCAPHULA.

E. GUTTATIPENNIS, sp.nov.

Picea ; prothorace antice et ad latera, elytris singulis maculis 5 parvis, abdomine, et tarsis, rufis ; capite subtilius parcius, prothorace (præsertim latera versus) crebre sat fortiter, punctulatis ; elytris seriatim punctulatis, vix striatis, interstitiis crebrius minus subtiliter punctulatis ; subtus subtilius minus crebre punctulata. [Long. $2\frac{4}{5}$, lat. 1 line (vix).

The red spots on each elytron are all small and are placed as follows :—three on the disc at a distance from the base of a quarter, two-thirds, and five-sixths the length of the elytra ; and two (much smaller than those on the disc) near the lateral margin, —one level with the first, and the other a little behind the second, of the discal spots. The reddish colour of the ventral segments is brighter down the middle than at the sides, and extends itself a little on the metasternum. The ventral segments bear some golden pubescence.

A much more parallel insect than the following, and appearing to hover between *Thallis* and *Episcaphula*, resembling the former in general appearance but having the elongate second antennal joint (about twice as long as the third joint) and the triangularly emarginate prosternum (receiving the pointed apex of the mesosternum) of the latter. The sides of the prosternum are strongly carinate. The prothorax is strongly transverse and very little narrowed anteriorly. The condition of the specimen before me, though in other respects very good, precludes any reliable description of the mouth organs.

N. Territory of S. Australia ; taken by Mr. J. P. Tepper.

E. DUPLOPUNCTATA, sp.nov.

Rufescens ; capite, prothoracis ad basin macula quadrata, elytris (fasciis tribus suturam versus abbreviatis exceptis)

nigricantibus; capite crebre fortiter, prothorace duplo (crebre subtilius et latera versus crassissime sparsius), punctulatis; elytris vix striatis, striis seriatim punctulatis, interstitiis subtilius sat crebre punctulatis; subtus crebre fortius (metasterno subtiliter) punctulata; segmentis ventralibus pubescentibus.

[Long. $2\frac{1}{2}$, lat. 1 line.

The ferruginous tone of the antennæ, legs, and metasternum is considerably darker than that of the under surface in general. The red fasciæ on the elytra are as follows: one near the base wavy and about as wide as a sixth of the length of the elytra, emitting from the middle of its front margin a projection which almost touches the base; a second considerably behind the middle, narrower than the anterior one and gently curved forward; a third close to the apex equal in width to the second; these fasciæ all touch the lateral margins and nearly reach the suture. The prothorax is strongly transverse and is evidently narrowed anteriorly. The prosternum has its process margined and triangularly emarginate at the apex. The greatest width of the insect is near the front of the elytra whence it is much narrowed hindward.

Allied to *E. rudepunctata*, Crotch, but differing *inter alia* in the coarse punctures of the prothorax being quite confined to the sides, in the prothorax having a large quadrate dark spot at the base, in the very different shape of the elytral fasciæ, and in the very evident rather close puncturation of the elytral interstices.

N. Territory of S. Australia; taken by Mr. J. P. Tepper.

CÆLOPHORA.

C. PUPILLATA, Muls.

Among some specimens forwarded to me from the N. Territory of S. Australia by Dr. Bovill I find an example that evidently pertains to this species, hitherto not noticed as Australian; it is known as inhabiting India, China, and Java. Several of its congeners, though omitted in Mr. Masters' Catalogue, are mentioned by Mulsant as occurring in Australia.

COCCINELLIDÆ.

CRYPTOLEMUS.

C. MONTROUZIERI, Muls.

I have recently received from F. M. Bailey, Esq., of Brisbane, two specimens of this pretty little *Scymnid*, taken in the Brisbane neighbourhood. The habitat of the species as given by its author is "Australia" merely; it is omitted altogether in Mr. Masters' Catalogue.

C. SIMPLEX, sp.nov.

Late ovalis; pubescens; subtilius sat dense subæqualiter punctulatus; ferrugineus; elytris nigris, apice rufescentibus; metasterno et abdominis segmento basali in medio infuscatis.

[Long. $2\frac{1}{2}$, lat. $1\frac{3}{8}$ lines.

Very like *C. Montrouzieri*, but a little wider,—especially behind,—and differently coloured, the legs and underside (except a slight infuscation of the latter) being entirely ferruginous, the scutellum red and the apex of the elytra more narrowly reddened.

Sent to me from the Northern Territory of S. Australia by Dr. Bovill.

NOTES AND EXHIBITS.

Mr. Brazier exhibited specimens of a land-shell, *Subulina octona*, Chem., collected by Mr. E. L. Layard at Canala, east coast of New Caledonia, in a coffee plantation. The species is peculiar to Cuba and other West Indian Islands, but evidently it has been introduced into New Caledonia at some recent date, though under what circumstances is at present a mystery.

Mr. Rohu exhibited a fine round carved wood *mere* or club from New Zealand, inlaid with eyes made from the shell of *Haliotis iris*.

Mr. Skuse exhibited the Diptera described in his paper, together with drawings of their wings.

Mr. Sidney Olliff exhibited a series of earthen cocoons of *Cephalodesmus armiger*, Westw., a beetle of the family Scarabæidæ, some containing larvæ or pupæ, and others specimens of immature perfect insects. The cocoons had been dug up in a garden at Parramatta at a depth of about eight inches.

Mr. Macleay exhibited four specimens of a species of Carp from the Wingecarribee River, and read the following explanatory note:—"The fishes now exhibited were found in a waterhole close to the Wingecarribee River at Elvo, Burradoo, during the last week, by Mr. W. R. Campbell. The waterhole was so nearly dry that the little water remaining in it was as thick as mud, and the fishes must have died very shortly if left in it. Mr. Campbell, therefore, had the holes emptied, and the fishes (several hundred) placed in the river in the immediate vicinity, with the exception of the four specimens sent to me and now exhibited. I find them to be American Cyprinidæ of the genus *Carpiodes*, Rafinesque (*Sclerognathus* of Valenciennes), a genus consisting of several species, all belonging to the freshwaters of the United States. I have not been able to make out the exact species. It would be interesting to know how and when the fish was introduced into this country, where its acclimatization, as far as Wingecarribee is concerned, seems to have been so perfectly successful."

Dr. Cox stated that he wished to place on record the regularity with which the large green Cicada makes its appearance each year in the neighbourhood of Sydney. For the last 17 years he had noted the dates, which he found to range from October 14th to 30th.

Mr. Fletcher read a letter from Hon. Dr. Creed, M.L.C., to the President, calling the attention of the Society to the sudden appearance of myriads of mice in various country districts of this colony, and suggesting that the subject was one worthy of investigation, as, owing to the destruction of crops and food for stock, the matter was becoming one of economic importance. Mr. Fletcher pointed out that the subject was one which had not been entirely overlooked, since in the Society's Proceedings for 1887, p. 447, would be found a paper by Mr. K. H. Bennett, giving particulars of an invasion of rats in the western portion of N. S. Wales during February, 1887.

Mr. Fletcher exhibited some young specimens of *Peripatus Leuckarti*, Säng., the progeny of one of the three living specimens exhibited at the Society's meeting in June last. The mother, for a period of four months, lived in a tin with damp moss and decayed leaves, but died a few days ago after giving birth to four young ones. These, when discovered (they were then a few days old) last Wednesday, were about 7 mm. long when extended, and nearly colourless, though with a lens the dark median nodose dorsal line, and the dark broad lateral band on each side were distinctly sketched out, the antennæ also dark; during the last few days the pattern and colour (dull slaty-blue or grey) have become still more pronounced, and a little diffused ferruginous red has made its appearance.

Also a number of botanical specimens, recent acquisitions to the herbarium collected at various excursions, all from the county of Cumberland or contiguous counties, including *Zieria involu-crata*, R.Br.; * *Z. granulata*, C.M.; *Bossiaea Stephensoni*, F.v.M.; *Pultenaea brunioides*, Meiss.; *P. polifolia*, A. Cunn.; *Acacia pruinosa*, A. Cunn.; *A. glaucescens*, Willd.; *Samolus Valerandi*, Linn.; *Persoonia oblongata*, A. Cunn.; *Grevillea trinervis*, R.Br.; *G. sericea*, R. Br., var.

WEDNESDAY, 28TH NOVEMBER, 1888.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

The President announced that no Excursion would be held during the ensuing month.

DONATIONS.

"Abstract of Proceedings of the Royal Society of Tasmania, 8th October, 1888;" "Tasmanian Salmonidæ exhibited in the Tasmanian Court at the Melbourne Centennial Exhibition, 1888." *From the Society.*

"Iconography of Australian Species of ACACIA and Cognate Genera." Decade XII. By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S. *From the Premier of Victoria, through the Librarian, Public Library, Melbourne.*

"Verhandlungen des naturhistorischen Vereines der preussischen Rheinlande und Westfalens." Folge 5, Jahrg. IV. (1887). *From the Society.*

"Annual Report of the Trustees of the Queensland Museum, 1887." *From the Curator.*

"Zoologischer Anzeiger." XI. Jahrg., Nos. 289, 290 and 291 (1888). *From the Editor.*

"Feuille des Jeunes Naturalistes." No. 216 (October, 1888). *From the Editor.*

"Report of the Board of Governors of the Public Library, Museum, and Art Gallery of South Australia, with the Reports of the Standing Committees, for 1887-88." *From the General Director and Secretary.*

"Characters of the Larvæ of Mycetophilidæ." By C. R. Osten Sacken. *From A. Sidney Olliff, F.E.S.*

"Proceedings of the United States National Museum." Vol. X. (1887), [Sheets 38-43, Plates 1-xxxv.] *From the Museum.*

"The American Naturalist." Vol. XXII., No. 260 (August, 1888). *From the Editors.*

"The Journal of Comparative Medicine and Surgery." Vol. IX., No. 4 (1888). *From the Editor.*

"Bulletin of the American Geographical Society." Vol. XX., No. 3 (1888). *From the Society.*

"The Victorian Naturalist." Vol. V., No. 7 (November, 1888). *From the Field Naturalists' Club of Victoria.*

"Proceedings of the Zoological Society of London for the year 1888." Part II. *From the Society.*

"Archiv für Naturgeschichte." Jahrg. LIII. Band I., Heft 3 (1887). *From the Editor.*

"Table Générale des Annales de la Société Entomologique de Belgique, I-XXX. ; et Catalogue des Ouvrages Périodiques de sa Bibliothèque, 26 Décembre, 1887." *From the Society.*

"Bulletin de la Société Zoologique de France." Tome XIII., No. 7 (July, 1888). *From the Society.*

"Proceedings of the Royal Society of Queensland, 1888." Vol. V., Part 3. *From the Society.*

"The Australasian Journal of Pharmacy." Vol. III., No. 35 (November, 1888). *From the Editor.*

"Les Plages du Croisic Récoltes Zoologiques ;" "Catalogue Provisoire des Espèces Françaises d'Isopodes Terrestres ;" "Description d'une Espèce Nouvelle du Genre Philoscia." Par Adrien Dollfus. *From the Author.*

"Melbourne Centennial International Exhibition, 1888.—Descriptive Catalogue of Exhibits of Metals, Minerals, Fossils, and Timbers in the New South Wales Mineral Court." *From the Department of Mines, Sydney.*

"Journal of the Royal Microscopical Society, London, 1888." Part 5. *From the Society.*

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE
COLEOPTERA OF AUSTRALIA.

BY A. SIDNEY OLLIFF, F.E.S.,
ASSISTANT ZOOLOGIST, AUSTRALIAN MUSEUM.

No. V.—ON CERTAIN SPECIES BELONGING TO UNRECORDED GENERA.

ANOBIIDÆ.

DORCATOMA (Herbst).

DORCATOMA LANIGERA, sp.n.

Elongate-ovate, moderately robust and convex, reddish testaceous, somewhat shining, closely covered with long recumbent testaceous pubescence; elytra strongly punctate-striate. Head transverse, very finely punctured. Antennæ reddish testaceous. Prothorax transverse, rather convex, narrowed in front, finely punctured, the pubescence both longitudinally and transversely recumbent; the sides slightly constricted in the middle. Scutellum very small, transverse. Elytra more than twice as long as the prothorax, nearly parallel for two-thirds of their length, then arcuately rounded to the apex, strongly and rather closely punctate-striate, the interstices narrow, impunctate, and slightly raised, the pubescence fine and silky, especially thick near the sides; shoulders rather prominent. Legs reddish testaceous, tarsi inclining to fuscous. Length $2\frac{1}{3}$ mm.

Sydney, New South Wales; found among dead leaves.

DRYOPHILUS (Chevr.).

I am in a position to record the occurrence of this genus, having recently examined and described a single specimen of a species closely allied to the European *Dryophilus pusillus*, Gyll., from Manero, New South Wales. Unfortunately the specimen has met with an accident which has damaged it past all recognition, so I am compelled, at the last moment, to withdraw the description from publication.

PYTHIDÆ.

RHINOSIMUS (Latr.).

RHINOSIMUS CORTICALIS, sp.n.

Elongate-ovate, somewhat depressed, shining; head and prothorax bronze-black, inclining to coppery; elytra dark fuscous, with four pale testaceous markings, two near the base and two behind the middle.

Head and rostrum finely and closely punctured, the latter strongly dilated at the apex. Antennæ inserted considerably before the eyes, reddish testaceous, the last three joints forming an indistinct fuscous club. Prothorax narrower than the elytra, broadly transverse, moderately strongly and closely punctured, with two distinct shining elevations at the base, one on each side of the middle; the sides somewhat narrowed both in front and behind, with two indistinct projections in the middle; the posterior angles slightly produced, acute. Scutellum short, transverse. Elytra narrowed both in front and behind, rather strongly convex, very finely and not very closely punctured; each with two large oblique patches and the apex pale testaceous; the shoulders rather prominent. Legs moderately long, the femora fuscous, the tibiæ and tarsi reddish testaceous. Length $2\frac{1}{2}$ - $3\frac{1}{2}$ mm.

Bowen, Queensland; under bark of *Acacia*.

This species appears to be very distinct from *Rhinosimus Wallacei*, Pasc., from New Guinea, the only species hitherto known from the Australian or Austro-Malayan regions.

SILPHIDÆ.

ANISOTOMA (Illig.).

ANISOTOMA TASMANIÆ, sp.n.

Ovate, rather short, reddish testaceous, shining; elytra with nine moderately distinct and uniformly punctured striæ.

Head broadly transverse. Antennæ reddish testaceous, last five joints forming a distinct club, of which the penultimate and ante-penultimate are slightly the broadest. Prothorax transverse, moderately convex, exceedingly finely punctured. Scutellum small, pointed behind. Elytra more than twice as long as the prothorax, with regular and distinctly punctured striæ, which, if anything, are more strongly impressed posteriorly, the interstices broad, finely and diffusely punctured. Legs very robust, reddish testaceous; femora broad, the posterior ones elongate. Length $2\frac{1}{2}$ mm.

Port Frederick, Tasmania; by sweeping at dusk.

A single species pertaining, without doubt, to this interesting genus, which is largely represented in Europe and North America, but is new to the Southern hemisphere, was captured by means of the sweeping net in January. Owing to their retiring habits these insects are easily overlooked, so that it is more than probable that other species remain to be discovered. In Europe experienced collectors have found that the best way of obtaining them is by sweeping amongst low-growing herbage at dusk, or just before a thunder storm, when the sky is heavily overcast.

DESCRIPTIONS OF HITHERTO UNDESCRIBED AUSTRALIAN LEPIDOPTERA (RHOPALOCERA).

By W. H. MISKIN, F.E.S.

PAPILIONIDÆ.

PIERINÆ.

TACHYRIS, Wallace.

T. ASTERIA, n.sp.

♂. *Primaries*.—Exceedingly angulated apically. Basal area, costa two-thirds of length, and upper half of discal cell bluish-grey. Apical area not extending to hinder angle, black, and within it sub-apical band of white spots, largest near costa; the largest spot slightly suffused with blue-grey, as also inner margin of apical area; rest of wing white.

Secondaries.—Blue-grey, with irregular outer margin of black, widest near apical angle, not reaching nearly to anal angle.

Underside: Primaries.—White with basal area nearly to end of cell chrome-yellow; costa and apical area neutral tint; an indistinct sub-apical band of clouded white.

Secondaries.—Wholly neutral tint with narrow margin of orange at base of costa; very indistinct light sub-marginal outer band; slight ochreous powdering at base of abdominal margin. Expanse $2\frac{9}{12}$ inches.

Hab.—Port Douglas, N. Queensland (Coll. Lucas).

I am indebted to Dr. Lucas of Brisbane for the opportunity of describing this novelty. The ♀ is at present unknown. It is apparently a nearly allied species to *Melania* of Fabr.

DELIAS, Hubner.

D. NIGIDIUS, Miskin.

The ♀ of this species was described by me in the Trans. Ent. Soc. London, 1884, p. 93. I have since procured specimens of the other sex, an examination of which confirms the distinctness of this insect as an undoubted species.

♂. As described in the ♀, except that there is no black at the base of the wings.

Upperside.—Costa very narrowly black; apical band much restricted, not extending to hinder angle.

Secondaries.—Base very narrowly black, extending along hinder margin only.

Underside.—Black band as above, but rather wider. Otherwise as in ♀. Ex. $2\frac{3}{12}$ inches.

Hab.—Johnstone River, N. Queensland (Coll. Miskin).

NYMPHALIDÆ.

NYPHALINÆ.

PYRAMEIS, Hub.

P. LUCASII, n.sp.

Primaries.—Wholly dark brown, nearly black, excepting a large irregular circular patch of fulvous-red near the centre of wing, but nearer to base than apex, extending across the centre of discal cell and nearly reaching hinder margin; within the red patch in centre of cell is a round black spot; sub-marginal outer row of white spots, indistinct towards hinder angle, the largest being about one-third from apical angle; outer margin fringed with white between the nervules.

Secondaries.—Basal area and abdominal border fuscous; apical angle black, with some white bordering along extremity of veins; rest of wing fulvous-red, some of the veins marked in black all through, some at the extremity only; abdominal angle black with a sub-marginal line of white; a sub-marginal outer row of round white spots ringed with black; fringe white between veins.

Underside: Primaries.—Almost as as on upperside, the colours paler, the fulvous-red with a slightly rosy hue, and the principal white spots larger.

Secondaries.—Bronze-brown, with darker patches edged with grey; row of white spots less distinct than on upperside; marginal outer band of shining ochreous surmounted by curved line of black. Thorax and abdomen above dark brown, beneath buff. Ex. $2\frac{2}{3}$ inches.

Hab.—Fernshawe, Victoria (Coll. Lucas).

I have also to thank Dr. Lucas for the loan of this very interesting novelty for description.

The species bears no resemblance to any other known one of this somewhat limited genus. It is marvellous that so very distinct an insect should have hitherto escaped notice; it must, however, be exceedingly local in its habits (in this respect singularly peculiar from its congeners), as I believe Dr. Lucas's specimen to be unique.

LYCÆNIDÆ.

THECLINÆ.

HYPOCHRYSOPS, Felder.

H. HECALIUS, Miskin.

I gave a description of the ♀ of this species in Trans. Ent. Soc. Lond. 1884, p. 94. I am now enabled to add that of the ♂,

a specimen of which in the collection of Dr. Lucas has been kindly lent me for the purpose.

♂. All the wings lustrous purple margined with black.

Primaries.—Margined on the costal and outer sides deeply with black.

Secondaries.—Widely bordered on every side with black; anal angle orange-red.

Underside.—As described in ♀, except that the ground colour is not so decidedly yellow.

Thorax and abdomen, upperside black, (former densely clothed with long hairs); beneath pale yellow. Ex. $1\frac{2}{12}$ inches.

Hab.—Victoria (Coll. Lucas).

H. EUCLIDES, n.sp.

♂. *Upperside*.—Both wings dense purple, outer margins narrowly bordered with black.

Underside.—Pale stone-colour, adorned with reddish-orange bands and spots, all surrounded with margin of light metallic green.

Primaries.—With the orange bands longitudinally along the costa and again within the cell, the latter with two short transverse branches terminating in black patches within the cell; a transverse one at termination of cell and another immediately above and beyond the last-mentioned; beyond a submarginal transverse row not reaching posterior margin; an outer marginal border of same not reaching posterior angle; near the base and below the cell an indistinct black patch.

Secondaries.—With all the bands transverse, and broken frequently into independent patches, but which may be said to constitute five nearly equidistant irregular transverse bands; base of

costa margined with orange, also anal angle continuing a short distance along outer margin, above which is a band of green, surmounted by crescents of orange; which are crowned with lines of black; termination of median and sub-median veins marked in black.

♀. *Upperside*.—Shining blue with violet hue; borders of dark brown.

Primaries.—Costal margin widely dark brown increasing in width towards apex; outer margin also widely dark brown, widest at posterior angle; discal area shining semi-transparent or whitish; fringe black.

Secondaries.—Margined widely on all sides with dark brown, the brown extending from outer margin in points towards the centre between the veins; fringe white; termination of median vein developed into decided tail.

Underside.—As in ♂.

Thorax and abdomen, in both sexes, above dark brown; beneath pale stone-colour. Termination of club of antennæ and collar reddish-orange. Ex. ♂. $1\frac{4}{5}$; ♀. $1\frac{5}{8}$ inches.

Hab.—Gipps Land, Victoria (Coll. Lucas).

This species approaches nearest, in appearance of the underside, to *H. Ignita*.

H. OLLIFFI, n.sp.

♂. Shining violet, margined with brown.

Upperside: Primaries.—Shining violet, outer margin dark brown, widest at apex; costal margin reddish-brown; dark short transverse mark at termination of cell; base dark brown.

Secondaries.—Dark brown, discal area extending almost to base, shining violet; indistinct blue patch at anal angle. Outer margin dentated; fringe brown.

Underside : Primaries.—Light brown; costal margin ochreous-yellow; two short transverse bands within the cell, each lightly margined with steel blue; a transverse band beyond the cell, not reaching quite across the wing; an outer marginal band, the two latter lightly margined on inner side with steel blue, all of orange-scarlet; three black spots arranged triangularly near centre, but rather closer to base of wing.

Secondaries.—Ground colour rather darker; five transverse somewhat curved, not always reaching quite across the wing and generally more or less broken, bands of rich scarlet, very narrowly lined, generally on each side, with brassy reflections which in some positions appear black; a basal and baso-costal short band of scarlet. Termination of nervules marked in black in fringe. Thorax and abdomen, above dark brown, beneath whitish; apex of club of antennæ reddish. Ex. $1\frac{1}{2}$ inches.

Hab.—Newcastle, N.S. Wales; Fremantle, W. Australia.

The specimen (the ♀ is at present unknown) from which my description is made is contained in the Australian Museum at Sydney, where I had the opportunity of examining it through the kindness of Mr. A. S. Olliff, of that institution, and by whom it was captured.

It is nearest to *H. Ignita*, Leach, but is distinguishable from that species (of which I have a good series in my own collection) on the upper side by the generally brighter colour, by the clearly defined marginal borders, and the absence of the copperish radiations from the outer margin along the nervules in the posterior wing; and on the under side by the somewhat different arrangement of the scarlet bands and the colour of the metallic borders thereto. In Leach's plate and descriptions the sexes of *Ignita* are reversed.

This is a still further addition to the number of species of this beautiful genus, making in all ten with which I am acquainted

from the Eastern Australian coast—all remarkably well distinguished—eight of which are contained in my collection.

APPENDIX.

Upon a recent visit to the Australian Museum I was shown by Mr. A. S. Olliff a pair of butterflies, captured by him at Newcastle, belonging to the genus *Zeritis*, Boisd., which upon a closer examination I recognised as *Z. Thyra*, L. The appearance of this pretty South African insect in Australia is interesting as evidencing the manner in which species are diffused through the introduction and acclimatisation of plants, which is, of course, the only reasonable mode of accounting for this the first known instance of its presence here.

NOTES ON AUSTRALIAN EARTHWORMS. PART V.

By J. J. FLETCHER, M.A., B.Sc.

Twenty new species, mostly from New South Wales, but with a few from Queensland and South Australia, are described in this paper, the gross anatomy, as in previous papers, being taken into account. They include, besides additions to the genera *Megascolides* (*Notoscolex*), *Perissogaster*, *Digaster*, and *Perichæta*, eleven species of *Cryptodrilus*, which, with four already described, make a rather heterogeneous collection of post-clitellian worms [with four couples of setæ to a segment, male pores on XVIII, a single gizzard, and in such cases as they have been visible a single pair of vasa deferentia] among which it is possible to pick out a well-marked group of which *C. mediterræus* may be taken as the type, and a second smaller group of the type of *C. saccharius*; the remainder differ among themselves and from these so much as not at present to permit of their being satisfactorily sorted into sections. As every considerable acquisition of new material throws fresh light on this matter it would be premature just now to attempt to separate any of them as types of new genera. Nevertheless worthy of mention are *C. fastigatus* with three pairs of nephridiopores to a segment, and two pairs of prostates, the two prostatic ducts of each side, however, uniting to form a single genital duct; *C. unicus* with a single median series of spermathecal and male pores—an intermediate condition between this and the rather widely separated pores in forms like *C. Sloanei* being offered in *C. manifestus*; and *C. singularis* with but single pairs of testes, ciliated rosettes, and vesiculæ—a condition which obtains also in *Megascolides* (*Notoscolex*) *Illawarræ*: also *Perichæta attenuata* and *P. enormis* of the type of *P. Coxi*, which, in the middle and posterior regions of the body are more or less *perichæte*, while for some distance the anterior setigerous segments have four couples of setæ like a *Cryptodrilus*.

Some fifty species of Australian earthworms are now known, but it is very probable that three or four times this number will not entirely exhaust this section of the fauna.

Professor Baldwin Spencer's admirable and superbly illustrated monograph* dealing with the anatomy of *Megascolides australis*, McCoy, the Giant Earthworm of Gippsland, is a contribution most welcome to the student of earthworms. In it Prof. Spencer points out that my name *Notoscolex* must give way to *Megascolides*, McCoy. Nevertheless, as the characters of *Megascolides* as summed up by Professor McCoy himself were †:—"I am constrained to use a special generic title *Megascolides* for the present form, and make it the type of a distinct genus, which only differs as far as I know from *Lumbricus* in its great size, very much more numerous rings, and the clitellæ formed of three separate short bands, not going round the body, but being confined to the ventral side," an opinion which, so far as I know, Prof. McCoy never subsequently modified—it is obvious that under the circumstances I was quite justified in proposing the genus *Notoscolex*, and in supposing the large Gippsland worms which I examined to be different from *Megascolides australis*.

Professor Spencer's interesting discovery of two separate pairs of vasa deferentia, and of a posterior series of large specialised nephridia will, when other species have been as minutely examined, it may be hoped, lead up to characters of diagnostic importance; e.g., characters, other than those of the clitellum, which will satisfactorily separate forms like *Megascolides* (*Notoscolex*) and *Cryptodrilus* are still desiderata. Nevertheless, as the Tasmanian *Megascolides* has a pair of nephridia in each segment, with a pair of conspicuous nephridiopores, while in *M. Illawarrae* n.sp., there are, as far as I can discover, only single pairs of testes, ciliated rosettes and vesiculæ (and presumably a single pair of vasa, for they are not visible in ordinary dissection), it yet remains to be

* Trans. Roy. Soc. of Victoria, Vol. I., pt. i., 1888; Abstract in Trans. and Proc. Roy. Soc. of Vict., XXIV., Pt. ii., p. 164.

† Prodomus of the Zoology of Victoria, 1878, Decade I., p. 23.

seen whether these and other variable characters are as useful for purposes of classification, as they are interesting from the standpoint of morphology.

I have to thank most cordially Messrs. A. G. Hamilton, T. G. Sloane, H. J. Fletcher, and the Rev. T. F. Potts for most valuable help in acquiring material; also Mr. Masters who brought me the first specimens of *C. manifestus* which came to hand. I have also to thank the Trustees of the South Australian Museum, and Professor Tate, F.G.S., of Adelaide, for the opportunity of examining specimens, which, except in one case, were either not new, or on which from paucity of material or the immature condition thereof I am unable to report at present beyond saying that one of Prof. Tate's specimens is certainly a new species, probably of *Megascolides*, but it is without any girdle and I have refrained from its dissection.

MEGASCOLIDES (NOTOSCOLEX) ILLAWARRÆ, n.sp.

Seventeen well-preserved rather contracted spirit specimens from 5.5 (juv.) to 20 cm. long, 4.5 to 7 mm. broad; number of segments from about 240-395. (Ten other specimens are more or less fragmentary).

Colour more or less pale slaty-brown or drab, most noticeable anteriorly and on the dorsal surface. Prostomium broad from side to side, ribbed, its convex anterior surface marked with from 3-5 vertical grooves; not dividing the buccal ring; the latter and usually to a less extent also the second segment ribbed all round right across from the anterior to the posterior margins.

Setæ: the interval between the setæ of the inner couples about half that between the inner couples themselves, and likewise about half that between the two couples of each side; the outer row of setæ of each outer couple in all the specimens irregularly sinuous after about segment xv, some of the setæ of these rows being two or three times as far as others from the corresponding setæ of the inner rows of these couples, the closest of them with an

occasional exception further apart than the setæ of the inner couples but not so far apart as the two couples of each side; the inner couples not visible on segment XVIII, for some distance both in front and behind which segment the setæ of the inner couples stand a little closer to each other than elsewhere.

Clitellum comprising eight or even nine segments, XIV-XXI or XXII, together with usually some portion of XIII slightly modified; complete all round when well developed, but thinner, especially on the last few segments, and of a lighter colour on the ventral surface, the inter-segmental grooves here not being altogether obliterated as they are laterally and dorsally. The ventral surface of XVIII tumid, the swelling extending some way on to the segment immediately in front as well as on to the one behind; a slight depression in the median ventral line divides the swollen surface into two elevations which carry the male pores, these about corresponding with the intervals between the inner couples of setæ. Spermathecal pores two pairs, on or immediately behind the anterior margins of segments VII and IX, a little ventrad of the first row of setæ on each side.

Nephridiopores not visible. Dorsal pores commence after about segment XI.

Alimentary canal presents globular dilatations with vascular walls in segments ix-xvi, especially in the last three or so of these; but there are no calciferous pouches as in *M. Camdenensis*.

Genitalia: one pair of testes and one pair of ciliated rosettes in XI; one pair of vesiculæ seminales in XII; genital ducts short and straight, and immediately behind each of them is a pair of small narrow sacs containing several—two in each sac—delicate curved tapering penial setæ, the longest about 2 mm. long; these are probably protruded through the male pores. Spermathecæ two pairs, the pouches broader and the ducts shorter than in *M. Camdenensis*, each with a rudimentary rosette-like cæcum placed anteriorly on the very short duct near its exit.

The last pair of hearts is in segment XII. The first complete mesentery is in front of the gizzard; the next six are very thick; the next two thinner, but thicker than those which follow.

Nephridial tubules or tufts of tubules numerous, minute; most conspicuous in segments III and IV, though more so in the next few segments than further back; in about the last forty segments, in addition to small tubules, there is a series of larger ones, one on either side of the nerve cord in each segment, doubtless comparable with the large posterior nephridia described by Professor Spencer in *M. australis*.

In other respects agreeing with *M. Camdenensis*.

Hab.—Mt. Kembla, Illawarra, N.S.W. (collected by Mr. A. G. Hamilton).

This species comes nearest to *M. Camdenensis*, from which it differs in having fewer segments, the clitellum including a segment or two less, and the outermost row of setæ on each side irregularly sinuous, as well as in the anatomical characters above mentioned; probably also the colour is distinctive, but I have not seen living specimens.

MEGASCOLIDES (?) (NOTOSCOLEX) PYGMÆUS, n.sp.

The complete individuals out of twelve (spirit) specimens from 50-85 mm. long, from 2-4 mm. broad; number of segments from about 145-200.

Colour pallid but with a tinge of brown. Prostomium divides buccal segment only partially (not half).

Setæ of the outer couples further apart than those of the inner ones.

Clitellum: several specimens (juv.) without any sign of it, in the others variously developed, but in none has it quite reached its maximum; comprising segments XIV-XVIII together with some portion of XIX, ventrally in front of XVII not so thick as to obscure

the intersegmental boundaries, but from this backwards enormously swollen and raised, obscuring the division between XVIII-XIX, owing to the whole ventral surface of XVIII to nearly as far dorsad as the third row of setæ on each side becoming tumid and encroaching slightly on XVII and still more on XIX; in the immature specimens without girdles corresponding with the intervals between the setæ of the inner couples swollen into slight papillæ, the setæ themselves apparently wanting, or at least not visible.

Male pores on two slight depressions on the swollen ventral surface of XVIII nearly corresponding with the interval between the setæ of the inner couples but a little closer to the median line, dorsad and slightly behind each of which is in some specimens a second small papilla with what looks like a pore: spermathecal pores two pairs, in worms with girdles on distinct papillæ on or just behind the anterior margins of VIII and IX, opposite but a little dorsad of the first setæ. Of the nature of accessory copulatory structures probably are two intersegmental ridges between XIX and XX, and XX and XXI, reaching on each side to about the second row of setæ, involving about one annulus of each segment, and sometimes presenting a pitted appearance; in one specimen similar ridges between XIII and XIV, and XIV and XV.

Nephridiopores not visible. Dorsal pores commence after about segment XI.

Alimentary canal: one pair of calciferous pouches underlying the intestine and occupying two segments, XII and XIII, constricted, and possibly representing two pairs; large intestine begins in XV; in each of segments V and VI a pair of large tufts of tubules, a smaller pair in VII, possibly salivary organs.

Genitalia: testes and ciliated rosettes two pairs in X and XI; vesiculæ seminales two pairs in XI and XII; prostates in XVIII, with short straight genital ducts. Spermathecæ two pairs in VIII and IX, each with a single very rudimentary cæcum.

Last pair hearts in XII. Nephridial tubules numerous, minute.

Hab.—Illawarra, N.S.W.

Except that this species is intracelitellian, at present I know of no characters particularly entitling it to be placed in the genus *Megascolides*. It is one of the species which seems to be more or less intermediate in character between this genus and the typical species of *Cryptodrilus*.

For specimens from Mt. Kembla, the first which I saw, I am indebted to Mr. Hamilton; subsequently I found others in the neighbourhood of Kiama.

PERISSOGASTER NEMORALIS, n.sp.

Of five rather contracted spirit specimens three only (one rather bruised) are whole: 10-13 cm. long, 4-6 mm. broad; number of segments, 195-245.

Colour pallid or flesh-coloured. Prostomium appears to divide the buccal ring slightly.

Setæ in eight longitudinal rows, those of the two outer couples further apart (about twice as far) than those of the inner ones.

Clitellum comprising segments XIV-XVIII, sometimes together with a portion of XIII, complete all round except that between XVI and XVII, taking in the posterior annulus of the former and the anterior one of the latter, is a pair of papillæ just dorsad of the inner couples of setæ, or they may become more or less fused so as to form an intersegmental ridge; while the ventral portion of the middle annulus of XVIII is tumid as far outwards on each side as the papillæ just mentioned, the ♂ pores on two little eminences about corresponding with the intervals between the inner couples of setæ; between XVIII and XIX is another pair of papillæ corresponding with the first pair, and more or less fused with a somewhat ridge-like swollen portion of the middle annulus of XIX. Between XIX and XX, and exceptionally also between XX and XXI, is an intersegmental ridge-like swelling reaching outwards on each side to a little beyond the inner couples of setæ.

Spermathecal pores two pairs, between VII and VIII, and VIII and IX, about in line with or a little dorsad of the first setæ. Dorsal pores commence after about segment X.

Probably of the nature of accessory genital structures are ridge-like swellings of the anterior annuli of VIII and IX between the pairs of spermathecal pores.

Alimentary canal: three gizzards in consecutive segments, v-vii; in segments x-xiv are five pairs of calciferous pouches, not quite so completely pinched off as, *e.g.*, in some species of *Cryptodrilus*; perhaps an intermediate condition between this and the globular dilatations in *P. excavata*; the large intestine commences about xvii, and is provided with a typhlosole.

Genitalia: two pairs testes and ciliated rosettes in x and xi; three pairs of vesiculæ seminales in ix, xi, and xii; prostates in xviii, with short thick genital ducts (not so short, however, as in *P. excavata*), behind and close to each of which, and probably communicating with the exterior through the male pores, are two minute sacs containing several thin, slightly curved, and tapering penial setæ, about 1 mm. long without allowing for the curve: the two vasa deferentia join the ducts close to the gland. Spermathecae two pairs in viii and ix, narrow cylindrical pouches with very short ducts, each with a small lobed knob-like caecum.

Nephridia: a number of small tubules (not so numerous as in *P. excavata*) in each segment; in some of the posterior segments the ventral row on each side larger, a condition which does not seem to obtain in *P. excavata*. A pair of large tufted organs, probably salivary glands, in segment iv.

The last pair of hearts in xiii.

Hab.—Gosford, N.S.W. (in brush land).

This species is readily distinguishable from *P. excavata* by the body being much less robust, though comprising as many or even more segments, the pattern and arrangement of the supposed accessory copulatory structures being different, dorsal pores being present throughout after about segment x or xi, whereas in *P. excavata* either they are absent or at most about twenty—and these small or rudimentary—are visible just near the posterior extremity.

PERISSOGASTER QUEENSLANDICA, n.sp.

Two spirit specimens 15.3 and 15.8 cm. long respectively, 5.8 mm broad; number of segments about 220.

Colour flesh-colour, but with a slight tinge of brown. Pro-stomium ribbed with from 3-5 vertical grooves; does not divide the buccal ring, though the latter having its anterior half ribbed all round, it may accidentally appear to do so partially.

Setæ of the outer couples further apart (on an average about twice the distance) than those of the inner ones, the outer row of each outer couple slightly sinuous.

Clitellum: no sign of it in either specimen.

Male pores corresponding with the interval between the setæ of the inner couples of segments XVIII—which are not visible on this segment,—or even a little closer to the median line, in one specimen on slight papillæ. Spermathecal pores two pairs, on the anterior margins of VIII and IX, rather close together, and ventrad of the inner rows of setæ. Accessory genital structures not developed.

Nephridiopores not visible. Dorsal pores commence unusually far forward, the first one rudimentary, between segments III and IV, the others very conspicuous, not circular but slit-like.

Alimentary canal: three gizzards in segments V-VII; dilatations of the canal in some of the segments XIV and XV, appear to be the only representatives of calciferous glands.

Genitalia: two pairs of testes and ciliated rosettes in X and XI; three pairs of vesiculæ seminales in XI-XIII; prostates in XVIII, with very short genital ducts as in *P. excavata*; penial setæ were not met with. Spermathecæ: two pairs in VIII and IX, each with a rudimentary rosette-like cæcum. [The small size of the vesiculæ, prostates, &c., together with the absence of the girdle, all tend to show the non-breeding condition of the single specimen dissected]. Last pair of hearts in XII.

Nephridia more numerous and minuter than in *P. nemoralis*; in the posterior region, as in that species, the ventral row on each side larger.

Hab.—Oxley near Brisbane, Queensland (collected by Mr. T. G. Sloane).

The numerous and conspicuous dorsal pores, together with the situation of the spermathecal pores, even in the absence of accessory copulatory structures, suffice to distinguish this species.

DIGASTER PERRIERI, n.sp.

Twenty-five (spirit) specimens from 3.5 (juv.) to 9 cm. long (the largest specimen in rather a soft condition), 2.5 mm. broad; number of segments from about 110-155.

Prostomium divides buccal ring very slightly.

Clitellum comprises four complete segments, XIV-XVII, complete all round when well developed, but usually the lines of demarcation between the segments not quite effaced on the ventral surface; [a condition which is true also of *D. armifera*, the specimens which furnished my description of this species I now know to have been immature].

This species is allied to *D. armifera*, with which it agrees in its general characters; characteristic points of difference are:—individuals are of smaller size, the body comprising fewer segments; supposed accessory copulatory structures are present, but they are on segments x and xi, or on ix-xi, in one case a rudimentary fourth one on xii, and they consist of ridge-like prominences of the middle annuli extending outwards on each side to about the second row of setæ, and frequently presenting a pitted appearance, whereas in *D. armifera* they are somewhat rectangular areas extending antero-posteriorly right or nearly across the segments, and outwards as far as or a little beyond the first rows of setæ, and they occur on segments xi and xii, in one case though a rudimentary additional one on x: in both species the ventral portion of segments xvii-xix is more or less altered, presenting

three parallel modified surfaces, but with the important difference that in *D. armifera* each of these is the ventral surface of one, the three segments with the tri-annulate subdivision effaced, these remaining independent of one another; while in *D. Perrieri* the middle one is the middle annulus of XVIII, the other two being intersegmental, taking in one annulus of each of the two segments between which they occur: the two pairs of vesiculæ seminales are in consecutive segments XI and XII: the penial setæ are of a different shape, the tips slightly bent inwards, but not cleft, below which for a short distance they are minutely serrate, but not swollen.

Hab.—Springwood, Blue Mts., N.S.W.

D. lumbricoides, Perr., has a girdle of three segments, XIV-XVI, and the dorsal pores commence after segment IV (*vide* figs. 64 and 65, and the explanation of them, in Perrier's monograph, *Nouv. Arch. du Mus.*, Paris, VIII, 1872, p. 197); moreover, he says of it that the disposition of the setæ is that of true *Lombrics*, and (*l.c.* p. 145) "point d'appareil copulateur." Both *D. armifera* and *D. Perrieri* have at least segment XVII, [and in some recently obtained fine specimens of the former in addition half or two-thirds of XIII and about the anterior annulus of XVIII except ventrally] included in the clitellum; the dorsal pores commence after about segment X or XI; the setæ of the outer couples are further apart than those of the inner ones; and both have penial setæ.

This variation in species of the same genus, in characters which at the commencement of one's investigations when dealing with a single or only a few species, one is apt to regard as of more than specific importance, is exemplified in the case of other Australian genera.

Perrier (in the explanation of fig. 64, *l.c.* p. 197) says that in *P. lumbricoides* the two male pores are preceded and succeeded by a pair of papillæ, as in the case of some species of *Perichaeta*. In *D. Perrieri*, especially in worms without girdles, it is evident that the three modified surfaces above-mentioned consist of three pairs

of papillæ, those of each pair corresponding with, but extending a little way on each side of the inner couples of setæ, and by fusion with the modified intermediate portion giving rise to ridges, in worms with girdles the middle one the most conspicuous, the papillæ carrying the male pores relatively more developed. In *D. armifera* there are no papillæ on xvii and xix, but the ventral surface of these segments is raised for a space extending outwards on each side about as far or a little beyond the first row of setæ, whereas on xviii the whole ventral surface is modified to a little dorsad of the inner couples, for a little distance on each side of which the surface is raised into an eminence which carries the male pores [and what appear to be two pairs of accessory pores, which appear to be wanting in *D. Perrieri*]; in worms with girdles these eminences are large and bulge a little fore and aft, while the modification on xvii is absorbed in, or more or less obscured by, the girdle.

CRYPTODRILUS MUDGEANUS, n.sp.

Five rather contracted spirit specimens from 43-58 mm. long, 5.5 mm. broad; number of segments from about 128-145.

Colour when alive probably pallid or flesh-coloured. Prostomium only partially divides the buccal ring.

Setæ of the outer couples further apart (about twice the distance) than those of the inner couples, but quite as far as the two couples of each side: the outermost row on each side in about the anterior half of the body, with an occasional seta out of place, straight; in the rest of the body in all the specimens these rows are irregularly sinuous, some of the setæ being more than twice as far from the corresponding setæ of the third row as others, but not alternating regularly; quite posteriorly the third row also may become irregular.

Clitellum comprising four complete segments, xiv-xvii, together with more or less of xiii (in one of the specimens the whole of xiii may be said to be included, though on the ventral surface the

groove between XIII and XIV is not quite effaced, while just the anterior margin of XVIII is modified), complete all round except for a dumb-bell-shaped genital papilla on the hinder portion of it situated between XVI and XVII but mostly on the latter, consisting of two small elliptical depressions with tumid margins corresponding with the intervals between the setæ of the inner couples but extending each way a little beyond them, connected by a sort of ridge, the intervening ventral portion between the depressions, except the posterior annulus of XVII, becoming tumid. The ventral surface of XVIII forms a shallow depression with raised or tumid margins (or it may be more or less dumb-bell-shaped like that which precedes it), extending outwards on each side nearly to the second row of setæ, on which are situated the male pores just dorsad of the first row of setæ. In three of the specimens between XXI and XXII and occupying the posterior annulus of the former, and the anterior and middle ones of the latter, is an elliptical elevation, its central portion depressed but not extending outwards on each side as far as the first seta; a fourth has an additional and similar one between XXII and XXIII; while the fifth has them between XX and XXI, and XXI and XXII. Oviduct pores on XIV, rather far apart, in front and just ventrad of the inner rows of setæ, usually situated towards the ends of a shallow transverse slit-like depression; spermathecal pores two pairs, on the anterior margins of VIII and IX, about opposite the first setæ.

First dorsal pore after about XI. Nephridiopores invisible.

Alimentary canal: gizzard in segment v; in x to XIII four pairs of calciferous pouches, kidney-shaped and stalked, and overlying the intestine as in *C. saccarius*, not underlying it as in Beddard's species, and in *C. canaliculatus*; the large intestine commences in XVI.

Genitalia; two pairs testes and ciliated rosettes in x and XI; two pairs vesiculæ seminales in XI and XII; prostates in XVII-XXII or XXIII, the genital ducts long and coiled (the vasa deferentia not visible). Spermathecae two pairs, in VIII and IX, the stalk (duct)

fairly long, with a single rudimentary pear-shaped cæcum close to the exit.

Corresponding with the genital papillæ are distinct internal white elevations, a pair in front of the genital ducts, the others median, underlying the nerve cord. No penial setæ met with.

Last pair of hearts in XIII.

Nephridia: numerous minute tufts of tubules, more conspicuous in the anterior region as far back as about segment XVII; no large specialised nephridia in the posterior region as in *Megascolides*.

Hab.—Cullenbone, near Mudgee, N.S.W.; from the flats bordering the Cudgong River (collected by Mr. A. G. Hamilton)

This species is allied to *C. saccharius*, but is easily distinguishable by (1) the presence of genital papillæ on the last clitellar segment, the presence of which interferes with the completeness of the girdle on this segment, (2) the presence of four instead of five pairs of calciferous pouches, (3) the cæca of the spermathecae being distinctly pear-shaped not rosette-like knobs, (4) while intersegmental tumid areas such as are usually present on the ventral surface between some of the pre-clitellar segments in *C. saccharius*, are not represented in any of the specimens.

CRYPTODRILUS CANALICULATUS, n.sp.

Twelve spirit specimens (not well preserved and much extended) from 12.5-25 cm. long, 3.5-5 mm. broad; number of segments from about 250-265.

Buccal ring bi-annulate superiorly, not divided by the prostomium, though being ribbed all round it sometimes appears as if it were completely or half divided by the prostomium. Body faintly but distinctly canaliculate throughout in the median dorsal line.

Clitellum comprising four complete segments, XIV-XVII, complete all round, in addition the posterior annulus of XIII and the anterior one of XVIII may be modified, but are not properly included.

Setæ of the outer couples widely separated as in *C. mediterræus*.

On the anterior annulus of XVIII, on the middle and posterior annuli of the same segment, and on the anterior one of XIX is a pair of papillæ corresponding with the intervals between the setæ of the inner couples; the second pair of these apparently carry the male pores, but they are not at all conspicuous; ventrad of each papilla of the second pair is in some specimens a small papilla. Oviduct and spermathecal pores as in *C. mediterræus*, but the former in a groove-like depression. In none of the specimens is the ventral surface of some of segments VI-IX modified as in *C. mediterræus*.

Dorsal pores commence between VIII and IX.

Nephridiopores as in *C. mediterræus*, the first three or four pairs opposite the fourth setæ, then for two or three segments changing to the level of the third setæ, then alternating between these two for some distance, and finally between the fourth and second; on a given segment the two pores are not always at the same level on both sides of the body.

Alimentary canal: gizzard in v; four pairs of calciferous pouches in x-XIII, as in *C. mediterræus*, lying below and at the sides of the canal; large intestine commences in XVI.

Genitalia: two pairs of ciliated rosettes and testes in x and XI; two pairs of vesiculæ seminales in IX and XII; prostates in XVIII-XIX. Ovaries and oviducts as usual; spermathecæ three pairs, in VII-IX, each with usually two short cæca, one on each side and in front of the duct near its exit (nearer than in *C. mediterræus*), but either of these may be slightly bifid or even trifid just at the tip, or completely sub-divided into two or three, or in one case there was but a single broad flat cæcum 5- or 6-lobed just at the tip.

Nephridia as in *C. mediterræus*, that is to say, a pair of convoluted tubules in each segment after the first one, those of alternate segments opening to the exterior opposite the setæ of the fourth or dorsal rows communicate with thin delicate vesicles just before opening to the exterior.

I have no doubt this is also the case in *C. mediterræus*, but in the specimens of that species dissected by me, I was unable to see the connection.

Hab.—Forbes, N.S.W. ; from the banks of the Lachlan River (collected by Mr. H. J. Fletcher).

This species is allied to *C. mediterræus*, but of the latter individuals have the body less robust and with fewer segments, are without the dorsal grooving, while the characters of the vesiculæ and spermathecæ are noticeably different.

CRYPTODRILUS SLOANEI, n.sp.

Four moderately contracted spirit specimens 52-71 mm. long, 5 mm. broad ; number of segments 135-150 : a fifth doubtful specimen (juv.) 35 × 3 mm., number of segments 180.

Colour pallid (the specimens somewhat bleached perhaps). Prostomium divides the buccal ring almost completely.

Clitellum not developed or indicated in any way in any of the specimens.

Male pores on conspicuous papillæ on XVIII, the pores opposite the second setæ, the papillæ extending some little way on each side. Three pairs of spermathecal pores opposite the second setæ.

Alimentary canal : three pairs calciferous pouches in XI-XIII more or less underlying the canal.

Genitalia : vesiculæ seminales in IX and XII. Spermathecæ three pairs, each of them with two cæca.

Last pair of hearts in XIII.

This species is allied to *C. mediterræus* and *C. canaliculatus*. From the former it differs (1) in the prostomium dividing the buccal ring more or less completely, (2) in having the vesiculæ seminales in IX and XII, and not in consecutive segments, and (3) in the spermathecæ having each two cæca. From the latter it differs in the body having fewer segments, and not being canaliculate, and—as far as I know at present—in the absence of anything like accessory genital papillæ. In all three

species the male and spermathecal pores are remarkably far apart—in line with the second setæ—the first and second rows of setæ themselves not standing so close together as usual; the setæ of the outer couples very far apart so that the outer row of each is quite dorsal in position.

Hab.—Coonabarabran, N.S.W. (collected by Mr. T. G. Sloane).

CRYPTODRILUS OXLEYENSIS, n.sp.

A complete spirit specimen 70 mm. long, 4 mm. broad; number of segments about 175. Two other specimens more or less incomplete.

Colour light yellowish-brown, darkest anteriorly and superiorly. Prostomium very partially divides buccal ring, both it and the buccal ring marked with a fine linear groove reaching backwards to the anterior margin of segment II or even III, for some distance further back the body sometimes finely and faintly canaliculate in median dorsal line.

Clitellum not developed in any of the specimens; in one of them segments XIV-XVI of a different colour as if indicative of an approaching girdle.

Male pores on small papillæ opposite the second setæ.

Spermathecal pores intersegmental, four pairs, opposite the second setæ commencing between segments V and VI.

Dorsal pores after segments VI or VII.

Alimentary canal: three pairs calciferous pouches in XI-XIII more or less underlying the canal.

Genitalia: vesiculæ seminales in IX and XII: spermathecæ four pairs, in VI-IX, each with a distinct single club-shaped cæcum, in the (non-breeding) specimen dissected as long as the pouch itself. Accessory copulatory structures not indicated.

Hab.—Oxley, near Brisbane, Queensland (collected by Mr. T. G. Sloane).

Like the preceding one this is another species belonging to the group of which *C. mediterræus* is the type. The grooving of the prostomium and first two segments, the additional pair of spermathecal pores, as well as its general appearance are among the external characters which serve to distinguish it.

CRYPTODRILUS MANIFESTUS, n.sp.

Seven rather contracted spirit specimens from 5.7 cm. long, 4.5-7 mm. broad; number of segments about 150-190.

Colour pallid or flesh-coloured. Prostomium divides the buccal ring completely. Segments usually more or less completely tri-annulate, frequently the anterior annular groove the more distinct; segments widest antero-posteriorly and most conspicuous in front of the girdle especially from segments IV or V to IX-XI.

Setæ in eight longitudinal rows of which on each side two are ventral, one lateral and one dorsal; the setæ of the outer couples further apart than those of the inner ones, and nearly as far as the two couples of each side. On segments XIII-XVII the setæ of the second row on each side stand successively a trifle closer to the corresponding setæ of the first row; on XVIII the setæ of the inner couples not visible; from XIX to XXII or thereabouts the second rows again diverge.

Clitellum comprising four segments, XIV-XVII, complete all round.

Male pores rather close together in correspondence with the approximated spermathecal pores, separated by a slight depression in the median line, on small papillæ on XVIII, just ventrad of the innermost setæ. Oviduct pores in front and just ventrad of the first setæ; spermathecal pores four pairs, on the anterior margins of segments VI-IX, the pores of each pair on either side of the median line remarkably close together. On XVII, XIX, and on the next three or four segments there are usually accessory copulatory structures—papillæ or depressions corresponding with the intervals between the setæ of the inner couples, those of some of the anterior pairs connected by a transverse depression.

First dorsal pore after segment VIII, but less distinct than those which follow. Nephridiopores: one pair to a segment, the first pair on the anterior margin of segment II opposite the fourth seta on each side; the next three pairs opposite the third setæ; the next pair opposite the second or the fourth setæ, after which they oscillate regularly between these two; slight individual variations are common, *e.g.*, in some specimens the two nephridiopores on segment VI correspond with the second setæ, while in two others one pore corresponds with the fourth, the other with the second, but on opposite sides of the body in the two specimens, and this arrangement may persist for a few segments or continue throughout.

Alimentary canal: the gizzard in segment V; in X-XIII four pairs of large calciferous pouches communicating with the canal by rather long ducts, each pair of ducts opening close together but on the floor of the canal; large intestine commencing in XVI.

Genitalia: testes and ciliated rosettes two pairs in X and XI; vesiculæ seminales two pairs in IX and XII; the genital ducts come off from the anterior extremities of the long narrow prostates, the hinder portions of which are bent sharply inwards and then forwards—the bends enclosing the genital ducts—sometimes reaching as far forward as segment XIV, or else compacted into a mass by being bent transversely first to one side and then to the other. Ovaries and oviducts as usual; spermathecae four pairs in segments VI-IX, each with a single club-shaped cæcum lying in front.

The last pair of hearts in XII, this and the two preceding pairs very large.

Nephridia: two alternating series of convoluted tubules corresponding with the nephridiopores, a pair in each segment after the first, a vesicular portion close to the proximal end of the tubule.

Hab.—Waterfall (Mr. Masters), Bulli (Rev. T. F. Potts), National Park, N.S.W.

This species belongs to the group of which *C. mediterræus* is the type, but is readily distinguishable by the presence of four pairs of spermathecal pores, those of each pair unusually close together.

CRYPTODRILUS (?) UNICUS, n.sp.

Twenty spirit specimens from 3.3 (juv.) to 9.5 cm. long, 3.6 mm. broad; number of segments 112-150.

Colour above purplish or reddish-brown, lighter below. Prostomium divides buccal ring only slightly (about one third). Segments after the first few biannulate, or with one of the annuli again subdivided. Body noticeably depressed in all the specimens, canaliculate throughout dorsally in the median line with a fine impressed line commencing on the prostomium, interrupted at the dorsal pores.

Setæ in eight longitudinal rows; the first from the median line and the second from the first at about equal distances; intervals between the second and third, and third and fourth about equal, and double that between the first and second. The inner couples on segment XVIII not visible.

Clitellum of four complete segments, XIV-XVII, complete all round but not so thick as to obliterate the intersegmental grooves in any of the specimens.

Male pore single, on a papilla on XVIII in the median line.

Oviduct pores two, in front and just dorsad of the innermost setæ on XIV: spermathecal pores five, intersegmental, in a single median series commencing after segment IV.

Nephridiopores: a pair on the anterior margins of the segments except the first one, the first two or three pairs a little dorsad of, the rest opposite, the fourth setæ. Dorsal pores commence after segment V.

Alimentary canal: gizzard in V or VI; the portions of the intestine in segments IX or X to XII more or less dilated; in XIII-XV there are three pairs of diverticula, the middle pair largest, those of each pair reaching almost from the median dorsal to nearly the median ventral line of the canal, incompletely pinched off, not communicating with it by a duct; the sacculated large intestine commencing about XVII.

Genitalia : vesiculæ seminales four pairs, in IX-XII, the first two pairs adherent to the anterior faces of the mesenteries between IX and X, and X and XI; the second and third pairs to the posterior faces of those between X and XI, and XI and XII; true testes and ciliated rosettes two pairs, in X and XI; prostates in XVIII, the genital ducts long and nearly straight; the vasa deferentia not visible. Ovaries and oviducts as usual: spermathecae five pairs of stalked pouches with single stalked caeca, those of each pair opening to the exterior by a common aperture under the nerve cord, but one of each pair rudimentary, and then the pouch and the caecum about the same length, usually alternately on opposite sides, at other times so consecutively for two or more segments.

Last pair of hearts in XII.

Nephridia: a pair of long much convoluted tubules in each segment except the first.

Hab.—Narrabri, Coonabarabran, N.S.W. (collected by Mr. T. G. Sloane).

CRYPTODRILUS FASTIGATUS, n.sp.

Five spirit specimens 63-89 mm. long, 3-4 mm. broad; number of segments from about 100-140.

Colour above reddish or purplish tinged with brown, or iridescent purplish, lighter below. Prostomium completely divides the buccal ring. From a little way behind the girdle backwards the body tapers steadily. Segments faintly or not noticeably tri-annulate.

Setæ of the outer couples much further apart than those of the inner couples—the outermost row on each side dorsally situated—and even than the two couples of each side.

Clitellum comprises four segments XIV-XVII, compact and complete all round.

Genital pores: the whole ventral surface of XVIII is tumid, the modified surface extending outwards on each side as far as the

second seta, posteriorly on to XIX, and anteriorly being confluent with the clitellum ; this presents a transverse furrow or depression reaching outwards on each side to about the first seta, near the extremities of which are the not very conspicuous male pores (the details are slightly different in the two specimens from Burrawang). Oviduct pores rather far apart, in front and just ventrad of the first setæ on XIV ; spermathecal pores two pairs, between VII and VIII, and VIII and IX, opposite the first setæ.

Nephridiopores conspicuous, three pairs to a segment after the first one, on the anterior margins of the segments, or even a little way back, opposite or a little dorsad of the first, third, and fourth setæ on each side.

Dorsal pores commence between segments IV and V, but the first one smaller and less conspicuous.

Alimentary canal : gizzard in V, a white glandular mass overlying both it and the posterior part of the pharynx ; in segments X-XVI the alimentary canal presents dilatations in some cases looking like rudimentary pouches ; the large intestine begins in segment XVIII.

Genitalia : two pairs testes and ciliated rosettes in X and XI ; two pairs of racemose vesiculæ seminales in XI and XII (in one specimen three additional similar but smaller bodies, one in XIII, and a pair in XIV) ; prostates two pairs, in XVIII and XIX-XXI, the second pair immediately behind and contiguous to the first, the two on each side at first sight looking like a single mass ; on lifting them however it is at once seen that they are separate, each of them having its own duct, but that the two prostatic ducts of each side join to form a single genital duct which soon increases in diameter, and is bent on itself ; a single vas deferens on each side joining the genital ducts at about the junction of the prostatic ducts. Ovaries and oviducts as usual ; spermathecæ two pairs in VIII and IX, pouches with distinct thick ducts, from each of which come off two short club-shaped cæca, one on either side.

The last pair of hearts in XII (in one specimen but in XIII in another).

Nephridia: three pairs of small convoluted tubules in each segment after the first, in three straight rows on either side.

Hab.—Burrawang, and Illawarra, N.S.W.

This is a very distinct new species, differing from any Australian species yet described in having two pairs of prostates; nevertheless as there is but a single pair of male pores I propose to retain it in the genus *Cryptodrilus*, at any rate for the present.

CRYPTODRILUS TENUIS, n.sp.

Three specimens and an anterior fragment (not in good condition), about 90 mm. long by 4 mm. broad, the body tapering towards posterior extremity; number of segments about 190.

Colour pallid (probably bleached, but even allowing for this lighter than in *C. fastigatus*). Prostomium completely divides buccal ring.

Setæ of the two outer couples further apart than those of the inner, the outermost row dorsally situated.

Clitellum not developed in any of the specimens.

Male pores on conspicuous papillæ corresponding with the interval between the setæ of the inner couples; two pairs of spermathecal pores opposite the first setæ.

No accessory copulatory structures visible.

Nephridiopores three pairs to a segment after the first one, on the anterior margin of the segments opposite the first, between the second and third but nearer the latter, and opposite the fourth setæ respectively on each side.

Dorsal pores (not satisfactorily determined, very inconspicuous if present).

Alimentary canal presents modifications, dilatations but not pairs of pouches, in about segments x or xi-xvi.

Prostates are a pair of long linear bodies coiled and folded into a mass, one extremity giving off the genital duct. Each of the spermathecae, of which there are two pairs, has a single rather rudimentary caecum.

Hab.—Braidwood, N.S.W. (sent by Mrs. Caird).

This is a distinct species, though from the few unsatisfactory specimens so far to hand the above description characterises it but imperfectly. It is allied to *C. fastigatus* in some respects, these two species at present standing alone in having three pairs of nephridiopores to a segment, and the prostomium completely dividing the buccal ring. They are readily distinguishable from one another by the difference in (1) colour, (2) the situation of the middle pair of nephridiopores, (3) the characters of the prostates, and (4) the caeca of the spermathecae. The dorsal pores commence further forward in *C. fastigatus*.

CRYPTODRILUS MEDIOCRIS, n.sp.

Ten (spirit) specimens are from 32-65 mm. long, and 2-3.5 mm. broad; number of segments from about 114-125.

Colour: body pallid but tinged with brown especially just anteriorly. Prostomium does not divide the buccal ring at all, but looks like a forward prolongation of it; the second segment not so distinctly separated from the first one as usual.

Setae in eight longitudinal rows, those of the outer couples further apart.

Clitellum comprising four complete segments, XIV-XVII, together with as much as half or two-thirds of XIII; complete all round, but the divisions between the segments on the ventral surface not entirely effaced.

Male pores not conspicuous, on XVIII, about in line with or just dorsad of the first setae, near the posterior edge of the pits with tumid margins usually present on this segment. Oviduct pores relatively close together on XIV; spermathecal pores two pairs, on

the anterior margins of VIII and IX, opposite the setæ of the innermost rows. Accessory (supposed) structures comprise (1) between x and XI a pair of oval sucker-like depressions with raised rims involving the posterior annulus of IX and the anterior one of x, their inner margins sometimes confluent in the median line, extending outwards a little beyond the second setæ; a similar pair between XVI and XVII; and two similar but smaller pairs between XIX and XX, and XX and XXI, but sometimes only one but either of these developed; in addition sometimes there are indications of another pair between XV and XVI sometimes on one side and sometimes on the other: the first and second pairs of the above-mentioned are very constant, and are visible in young worms and these without girdles; the others are usually only noticeable in breeding worms and in these there is considerable variation in detail of pattern and amount of tumidity, so that sometimes they are depressions with raised and tumid rims, or the central portion of the depression may be raised, or they may become papillæ. In addition a pair on XVII (usually obscured by girdle if developed) or on XVIII.

Nephridiopores three pairs to a segment except the first few, on the anterior margins of the segments opposite the first (or exceptionally on one side of the body opposite the second), third, and fourth setæ, in the last case first visible on segment III; the other two pairs in my specimens first visible on VI or VII.

Dorsal pores commence after about segment XI.

Alimentary canal: gizzard in v; dilatations of the alimentary canal in some of the segments from about VIII, especially in XII-XIV, but there are no pairs of pouches; large intestine begins in XVI; a typhlosole appears to be present.

Genitalia: two pairs of vesiculæ seminales in IX and XII; testes and ciliated rosettes in x and XI; prostates incised glands occupying 3 segments; spermathecæ two pairs in VIII and IX, each with a distinct but short single cæcum attached to the short duct a little above its exit. Corresponding with the sucker-like depressions there are internally white glandular masses.

The last pair of hearts in XII.

Nephridia: three pairs of delicate tubules to a segment (except a few anterior ones).

Hab.—Near Parramatta, N.S.W.

In my description of *Digaster armifera* (P.L.S. N.S.W. (2) Vol. I. p. 948) the specimen referred to as "one very small specimen (34 mm. long) has a very good clitellum which takes in a portion of XII and includes XVII," I now know to belong to *Cryptodrilus mediocris*; a single example, the first met with, was obtained with the specimens of *Digaster*, and was not recognised as generically different; by an error the first and second segments were counted as one.

CRYPTODRILUS ILLAWARRÆ, n.sp.

Of ten (spirit) specimens four complete ones are from 8-10 cm. long, 2-3 mm. broad; number of segments 250-270.

Colour pallid or pale flesh-colour. Prostomium only partially divides the buccal ring (less than half).

Setæ of the two outer couples about twice as far apart as those of the two inner ones, but closer than the two couples of each side; the eight rows straight and regular throughout.

Clitellum comprises four segments, XIV-XVII, compact and complete all round (five of the specimens without girdles).

Male pores on conspicuous papillæ on XVIII about corresponding with the intervals between the setæ of the inner couples but extending both ways a little beyond, the pores themselves would be nearer the position of the outer setæ of the couples if these were visible on XVIII; the ventral portion of the middle annulus of XVIII intermediate between the papillæ usually tumid so as to form a transverse ridge more or less completely connecting them. Oviduct pores on XIV, rather close together, each being nearer to the median line than to the seta dorsad of it; spermathecal pores two pairs, between VII and VIII, and VIII and IX, opposite but just

dorsad of the innermost setæ. Between XVIII and XIX, opposite the intervals between the setæ of the inner couples is a pair of genital papillæ apparently with pores, usually a little closer together than the papillæ which carry the male pores, and like these usually connected by an intermediate transverse ridge; the papillæ present in specimens without girdles.

* Nephridiopores not visible. Dorsal pores commence after segment X or XI, the first one usually smaller and more indistinct than the others.

Alimentary canal: gizzard in V; calciferous dilatations (but pairs of pouches not pinched off) in VII-XIV; large intestine straight and sacculated commencing in XVI.

Genitalia: testes and ciliated rosettes two pairs, in X and XI; vesiculæ seminales two pairs in IX and XII; prostates in XVIII-XX, genital ducts straight, vasa deferentia not visible; penial setæ not observed. Spermathecæ two pairs of stalked pouches in VIII and IX, each with two club-shaped short cæca, one on either side of and about half way up the stalk or duct.

The last pair of hearts in XII.

Nephridial tufts numerous, larger and more conspicuous in the anterior part of the body, very large in segments V-VII (possibly salivary glands).

Hab.—Illawarra, N.S.W.

Var. a.

Four (spirit) specimens.

Easily distinguishable from specimens from Illawarra by the presence of an additional pair of intersegmental copulatory papillæ, between XVI and XVII; in other respects, as far as I know at present agreeing with them.

Hab.—Springwood, Blue Mts.

CRYPTODRILUS SINGULARIS, n.sp.

Forty rather contracted (spirit) specimens are from 45-130 mm. long, 3-6 or 7 mm. broad; number of segments from about 205-240.

Colour pallid or flesh-coloured, spirit specimens with a tinge of brown. Prostomium rather depressed, dividing the buccal ring slightly.

Buccal ring narrow (from before backwards), the next three or four segments successively longer (from before backwards) and wider and biannulate, VI-IX widest and tri-annulate, after which the segments are shorter (from before backwards).

Setæ in two couples on each side, the first ventral, the second lateral; the setæ of the former less than .5 mm. apart; those of the latter about 1 mm. or a trifle more; the two couples nearly 2 mm. apart.

Clitellum when complete comprising segments XIII-XVII, and in addition in a few specimens the first or the first two annuli of XVIII, or even a little more in the ventral and ventro-lateral region, so as to include the ♂ pores; the whole of XIII not included in some specimens; complete all round except for a large genital papilla on the hinder ventral portion of it.

Male pores on papillæ occupying the two anterior annuli of XVIII, extending a little way on either side of the setæ of the first couple or altogether dorsad of them, their extremities in line with the extremities of the large genital papilla, the pores themselves very inconspicuous, about in line with or a little dorsad of the outer seta of each inner couple; in breeding worms the papillæ usually connected by an intervening tumid ridge. Oviduct pores on XIV, in front and ventrad of the setæ of this segment, flush with the surface, or sometimes opening towards the ends of a transverse shallow slit-like depression: spermathecal pores two pairs, not intersegmental but on small papillæ either on the anterior margin of the middle annuli, or between the first and middle annuli of segments VIII and IX, just in front of and nearly in line with the first seta on each side.

Accessory copulatory structures or genital papillæ of a characteristic pattern are noticeable in all but the very youngest and smallest specimens, even in those in which the girdle is

undeveloped. Between segments XVI and XVII, taking in the last annulus of the former and the first two of the latter, is an elliptical smooth and shining convex papilla or boss with a circumferential raised rim, extending a little dorsad of the first couple of setæ on each side, narrower at the two ends than it is in the middle; in worms with well developed girdles it is very conspicuous and large, and encroaches upon the preceding and succeeding annuli so that the inner couples of setæ of XVI, when visible, are seen to be immediately in front of it, while posteriorly it may take in the last annulus of XVII, slightly pushing the ventral portion of XVIII between the male pores a little out of place; otherwise it is completely surrounded by the glandular epithelium of the clitellum. Two or even three somewhat similar but smaller papillæ or bosses (sometimes however they appear as depressions) not extending beyond the inner couples or even the innermost rows of setæ, may occupy similar positions between XVIII and XIX, XIX and XX, and XX and XXI (that is to say the greater portion—two-thirds— of these intersegmental bosses belongs to the posterior segment of each pair); but any two of them—most commonly the first or third—may be absent or rudimentary: the relations of the papillæ, even before the girdle is developed, variously diversified owing to a tendency of the ventral surface in this region to become modified. Frequently a ventral intersegmental swelling is present between VIII and IX, but without definite pattern.

The first dorsal pore is between segments XI and XII. Nephridiopores not visible.

Alimentary canal: the gizzard has behind it the first complete mesentery—the posterior one of segment V—; calciferous pouches are not present, but from VIII-XIV the intestine presents slight dilatations, after which there is a large almost pear-shaped one occupying two segments—XV and XVI—which immediately attracts one's notice on opening a worm; in XVII the canal narrows again, while the large intestine begins in XVIII; this is without any typhlosole of the ordinary character, but just from

about segments XX to L, its floor presents four conspicuous longitudinal ridge-like folds, two on either side of the median line.

Genitalia : one pair of testes and one pair of ciliated rosettes in segment XI ; a single pair of racemose vesiculæ seminales in XII, attached to the posterior face of the mesentery between this and the preceding segment ; the prostates are in XVIII and XIX : two pairs of spermathecæ in VIII and IX, pouches with rather short duct, each with a single rather rudimentary club-shaped cæcum placed on the inner side of the duct near its exit.

Internally there are white swellings corresponding with the genital papillæ. The last pair of hearts in segment XII.

Nephridia are minute tubules attached to the cœlomic wall at intervals forming about five longitudinal rows on each side of the body.

Mesenteries from the anterior one of VI to the anterior one of XII are thicker than the others.

Hab.—Burrawang, N.S.W.

PERICHÆTA INDISSIMILIS, n.sp.

Twenty-seven spirit specimens (very successfully killed in an almost fully extended condition) of various stages are from 5.11 cm. long, and 2.3 mm. broad ; number of segments from about 90-110,

Colour purplish-red above, darkest in the anterior region ; paler below.

Prostomium nearly divides (about $\frac{3}{4}$ or a little more) the buccal ring ; the latter usually grooved from before backwards in the median ventral line.

Setæ at first 20 per segment, increasing about XIII to 24, and still further back to 26-30, or rarely a few more.

Clitellum present in only one specimen and only then partially developed, comprising segments XIV-XVI.

Male pores on two small papillæ corresponding with the interval between the first and second setæ on each side, the pores themselves a little dorsad of first seta; the papillæ frequently connected by an intermediate ridge, while contiguous to and immediately dorsad of each of them is a more or less developed eminence extending outwards to the third or fourth setæ, and from before backwards more or less completely across segment XVIII. Oviduct pores just in front of the ventral interval devoid of setæ on XIV, rather close together; spermathecal pores two pairs [in one case three pairs, and in another four pores on one side and three on the other], between VII and VIII, and VIII and IX [when more in front of these] in line with or just dorsad of the first setæ on each side. Accessory copulatory structures comprise modifications of the ventral surface of segments VII-X, XVII, and XIX-XXIII; on each of VII-X a pair of sub-circular swellings, one just on each side of the median line, extending outwards to the third or fourth setæ, and occupying about the anterior two-thirds of the width (from before backwards) of the segment, a pore-like depression in each, opposite and in front of the interval between the first and second setæ; on the others usually a transverse linear fossa with raised rims in front of the interval devoid of setæ, or simply an eminence, and reaching outwards on each side to about the second setæ, in one case the posterior four being situated in raised quadrilateral areas grooved in the median longitudinal line; in most of the specimens these structures are represented only by ill-defined swollen surfaces, but indications of them in some shape or other are very constant.

Nepriodipores invisible. Dorsal pores commence after segment IV or V.

Alimentary canal: a white glandular mass commencing on the posterior half of the pharynx and extending back to about segment VII, overlying and obscuring the small gizzard in V, is very noticeable; three pairs of calciferous pouches, in X-XII; in most of the specimens dissected the large intestine appeared to begin about XXV, but this was, I think, merely accidental.

Genitalia: two pairs of vesiculæ seminales, in IX and XII. Spermathecæ two [three or even four] pairs in segments VIII and IX [and VI and V], with cæca as long as the pouch and its duct together.

In each of segments VII-IX there is a pair of conspicuous tufted organs consisting of a roundish mass of tubules lying in front of the posterior mesentery with a stalk or duct reaching forward to the anterior mesentery a little dorsad of the spermathecal ducts. Attached to the cœlomic wall just behind the mesenteries are numerous tubules—probably nephridia.

In other respects this species calls for no special mention.

Hab.—The shores of Lake Alexandrina, S.A. (collected together with specimens of *P. exigua* var. *Murrayana* near the water's edge under rotten vegetable matter, by Dr. Stirling in November, 1887. *Coll. Adelaide Museum*).

Obs.—This species is apparently closely allied to *P. fecunda*. I cannot find sufficient difference to justify the separation of of the two specimens with more than two pairs of spermathecæ as a different species, and at present I regard them as individual variations. On the whole I find the number of these organs very constant in the different species.

PERICHÆTA ATTENUATA, n.sp.

Six complete somewhat contracted (spirit) specimens are from 60-100 mm. long, and 2-3 mm. broad; number of segments about 180-220. [Four other incomplete but otherwise good specimens also examined].

Colour pallid. Prostomium only slightly divides the buccal ring (less than half). Body slender; segments with fewer annuli than in *P. Cowii*, after the first two or three usually more or less conspicuously tri-annulate, in the posterior region where the setæ are most numerous the annulation absent but the ridges carrying the setæ very conspicuous.

Setæ on the setigerous segments of about the anterior two-thirds of the body 8 per segment, arranged as in *Cryptodrilus* in four couples, the interval between those of the outer couples greater (nearly twice) than that between those of the inner couples, but less than that between the two couples of each side; then increasing to 12, sometimes only 10 or 11 (6 on one side and 5 on the other) visible; still further back in about the posterior fourth of the body—the last four or five smaller segments excepted—the setæ still more numerous, as many as 28, in this region forming two more or less incomplete half-circles, the ventral break very well marked the innermost longitudinal rows of setæ being straight throughout, about twice the width of an average interval; the dorsal break sometimes quite obliterated, some of the dorsal setæ coming close to the median line; the setæ of the half-circles at varying distances apart, sometimes quite close, sometimes separated by considerable gaps, hence the rows of setæ in this region are most irregular.

Clitellum comprising nearly five segments, XIV-XVII together with nearly the whole of XIII, complete all round except for the ventral surface of XVII occupied by genital papillæ.

Male pores not conspicuous, on papillæ on the two posterior annuli of XVII corresponding with the intervals between the setæ of the inner couples; a pair of similar papillæ in front, on the two posterior annuli of the ventral surface of XVII, in worms with girdles the papillæ larger (usually of both pairs) and swollen, then often taking in the anterior annulus of the segment immediately behind them so as to appear intersegmental, the two papillæ of each side then contiguous or confluent, but more or less separated from those of the opposite side by a depression, the area occupied by the four papillæ and the intervening space circumscribed by a very well-marked raised border or rim, elliptical in outline, its long axis transverse, its anterior and posterior margins well defined just behind the anterior annuli of XVII and XIX, its lateral ones more or less fusing with the bases of the papillæ whose dorsal limits reach to a little dorsad of the inner couples of setæ.

Spermathecal pores two pairs, between segments VII and VIII, and VIII and IX, opposite the first setæ.

Dorsal pores commence after about XII, the first one or two not always distinctly visible.

Nephridiopores not visible.

In having six pairs of calciferous pouches in VIII-XIII, as in other respects, this species agrees with *P. Coxii*. Points of difference are that the two pairs of vesiculæ seminales are in IX and XII, instead of consecutive segments; the spermathecæ are long pyriform pouches each with a single distinct club-shaped cæcum; the prostates are smaller, extending through only about three segments, and the last pair of hearts is in XII.

Hab.—Mt. Wilson.

This, and the species next to be described, belong to the same section of the genus as *P. Coxii*, characterized by a marked difference in the number of setæ on the anterior and posterior setigerous segments, caused by a tendency in the former to a reduction in the number; also by the pallid colour of the body, and by the large number of pairs of calciferous pouches. [In *P. Coxii* the setæ are not at all conspicuous on the first few setigerous segments, especially on the first two, *i.e.*, segments II and III; but after re-examining a number of specimens I find that these two segments have usually each 8 setæ—in one specimen on III there were 8 on one side and 6 on the other—after which the next few segments have 12, or here and there, as far back as XIII, 14 or 16; still further back the setæ become more numerous and the setigerous ridges more conspicuous, until posteriorly the number increases to about 30 with many gaps in the half-circles, but occasionally when these are more complete as many as about 50 may be counted; the two innermost (ventral) rows are straight throughout, and are the only regular ones. The body is also much more robust, and the genital papillæ are not intersegmental but are chiefly on the anterior annuli except when there is more than one on a segment]. The three species are

readily distinguishable from one another, and differ more in appearance than one can easily put into definable characters. Any one having at his disposal only anterior fragments of a few specimens of the two new species, might easily be misled into thinking that he was dealing with species of *Cryptodrilus*.

PERICHÆTA ENORMIS, n.sp.

Nine complete (spirit) specimens, several of them young ones, from 50-87 mm. long, 3-4 mm. broad; number of segments about 200-220. (Four other incomplete but otherwise good specimens also examined).

Agreeing with the foregoing species in most respects, but differing in regard to the number and arrangement both of the setæ and of the genital papillæ, and in the number of the cæca of the spermathecæ; the body is not so slender, and the dorsal pores seem to commence after segment x, the first two or three not always easy to see.

Setæ: the first dozen (occasionally one or two less, frequently a few more) setigerous segments with 8 setæ per segment, in four couples as in *P. attenuata*; then the number increases to 12—rarely 5 on one side of a segment and 4 on the other, or 5 on each side—which number then continues fairly constant; the additional setæ making their appearance between the original second and third rows on each side, or one on either side of each original third row, or here and there one dorsad of the original outermost rows; the two innermost (*i.e.* ventral) rows on each side straight throughout, a median ventral interval devoid of setæ about twice that between the setæ of the first and second rows on each side; for some distance one or two of the other rows and the outermost one fairly straight also, leaving a broad median dorsal interval devoid of setæ; soon more and more of the setæ become shifted dorsad, until in about the posterior half of the body all the rows but the two innermost on each side become more or less sinuously irregular, sometimes alternating irregularly

for some distance, while the dorsal interval devoid of setæ becomes correspondingly obliterated, many of the setæ being almost in the median line; in about the posterior fourth of the body this state of things becomes still more marked, the setæ—of which on some segments as many as 16 may be counted, a few additional ones having appeared—being now situated on conspicuous ridges, giving the body a more *perichaete* appearance, the setæ of the half circles at noticeably irregular distances apart.

Genital papillæ: between each two segments from xv-xxi is a pair of flat-topped genital papillæ with indistinct pores—six pairs when all are developed, but some of them especially the first or the one between xviii and xix, or the hindermost may be wanting altogether, or only slightly developed, or only on one side of the body, or the last pair may be between xxi and xxii—opposite and extending outwards a little dorsad of the interval between the first and second setæ on each side, the corresponding papillæ of opposite sides more or less completely connected across the median line, giving rise to what, for want of a better appellation, in my descriptions of other worms I have called 'dumb-bell-shaped.' The male pores are not very conspicuous, on two little papillæ on the pair of genital papillæ between xvii and xviii, and $\frac{2}{3}$ of which are on the latter segment, corresponding with the interval between the first and second setæ (not visible on xviii) on each side but just ventrad of the latter.

The spermathecae are pouches with rather long ducts, each with two short but distinct club-shaped cæca, one on either side of the duct near its exit, just as in *Cryptodrilus Illawarra*.

Hab.—Near Gosford, N.S.W. (in brush land).

PERICHÆTA MACLEAYI, n.sp.

Twelve (spirit) specimens from 55-90 mm. long, 3.5-4.5 mm. broad; number of segments from about 80-90.

Colour above dark purplish-brown especially in front of the girdle, lighter and more reddish at the sides, paler below. Prostomium divides the buccal ring for a little more than half, the latter grooved in the median ventral line.

Setæ at first 20 per segment, just behind the clitellum 24 may sometimes be counted, the number increasing in the posterior region to about 28. The median ventral interval devoid of setæ from 2-3 times the width of an ordinary one between two setæ; the median dorsal interval narrower, nearly twice an ordinary one.

Clitellum comprising segments XIV-XVI together with two-thirds of XIII and of XVII, complete all round except for a little unmodified patch on which are the oviduct pores.

Male pores on papillæ on XVIII, about opposite the second setæ on each side, but being large and slit-like, extending both ways beyond these setæ. Spermathecal pores two pairs, between VII and VIII, and VIII and IX, opposite or a little ventrad of the third setæ. Accessory copulatory structures comprise a pair of genital papillæ on XVII, and a similar pair on XIX, in both cases a little ventrad of the papillæ carrying the male pores, and corresponding with the intervals between the first and second setæ; the papillæ of each of these two pairs frequently connected by an intermediate ridge or swelling—on the anterior annulus of XVII and the posterior one of XIX; hence the six papillæ and their connections come to enclose a basin-shaped depression; sometimes the papillæ have one or two pit-like depressions (apertures?), and occasionally there is a small papilla on XVIII between those carrying the male pores: also a pair of swellings on X, and another on XI, extending a little beyond the first and second setæ on each side, and antero-posteriorly across the segments, best defined in worms with well-developed girdles and then each with a central pore-like depression.

Alimentary canal: only two pairs of calciferous pouches in XI and XII.

In other respects like *P. australis*.

Hab.—Sydney (common in the Hon. W. Macleay's garden at Elizabeth Bay).

This species is allied to *P. australis*, but differs in respect of the papillæ on which the male pores are situated not mammillary, in having accessory genital papillæ and ridges on xvii and xix, and swellings on x and xi, in having fewer setæ in the posterior region, and the spermathecal pores more ventrally situated; individuals also are smaller, the body comprising fewer segments; while there is a tendency for much both of xiii and xvii to be included in the girdle. I have recently obtained some large and very fine examples of *P. australis* which have the ventral surface of xvii more or less tumid, with a depression opposite and in front of the papillæ carrying the male pores.

NOTES AND EXHIBITS.

Dr. Cox exhibited a Crustacean, (*Squilla* sp.) numbers of which have of late been brought to market with the large prawns now abundant, having been captured in the prawn-nets.

Mr. Ogilby exhibited—(1) A specimen of a fish, *Apogon guentheri*, whose mouth was crammed with ova, suggesting the possibility of this species having contracted the habit (well known in other genera, such as *Hemipimelodus*, *Chromis*, &c.) of hatching out the ova in the pharynx; on the other hand, possibly the fish, having been placed suddenly in spirits, may have attempted to eject the contents of its stomach, but was unable to complete its work. This view of the matter seems less probable, however, since, from practical knowledge, Mr. Ogilby feels certain that all fishes on the first approach of danger eject the contents of the stomach at once.

(2) Two specimens of *Ambassis*, from the Parramatta River, in which the second dorsal fin has, as often as not, two spines.

(3) Two specimens of a rare South Australian snake, *Vermicella bertholdii*, presented last week to the Australian Museum by Mr. Zietz of the Adelaide Museum, by whom they had been collected.

Mr. Burnell exhibited a monstrous kitten with eight legs.

Mr. Macleay exhibited two species of Cyprinidæ sent to him by Mr. W. R. Campbell of Elvo, Burradoo. One species was taken in Bowral Creek, and proved to be of an American genus (*Carpiodes*) identical with some specimens exhibited by him at the last meeting; three specimens of the other species were taken from the stomach of a cormorant, shot on the Wingecarribee River, and are small specimens of the common Crucian Carp, *Carassius vulgaris*.

Mr. Fletcher exhibited a number of plants collected in the Wagga district by Mr. J. R. Garland, and presented by him to the herbarium. Those of most interest to Sydney botanists were:—*Ricinocarpus Bowmani*, F.v.M., "from the 'Hanging Rock,' growing on the steep talus immediately under the precipitous eastern face of the mountain, and of interest as not having been seen or heard of anywhere else in this neighbourhood, or indeed anywhere so far south; many vigorous plants are to be met with at the spot referred to, but confined to a space of less than an acre; flowers in September": *Cassia eremophila*, A. Cunn., "flowering profusely in the scrub near the Rock Railway Station:" *Dampiera lanceolata*, F.v.M., "growing luxuriantly about the ballast quarries at the foot of the 'Hanging Rock'; not noticed until this year when it was in full bloom about the end of September": *Grevillea floribunda*, R.Br., "from the ironbark ridges at Mimosa, between Wagga and Temora; also on the 'Hanging Rock' range": *G. parviflora*, R.Br., "from the scrub at Mimosa; locally known as 'pin bush'": *Ammobium alatum*, R.Br., "from the banks of the Murrumbidgee, near Wagga; blooms in October and November."

Mr. Fletcher also showed two living specimens of *Peripatus Leuckarti*, Säng., from Burrawang, County of Camden, a new locality for this interesting creature, though not far distant from the other places where all the specimens so far recorded from New South Wales have been found, with the exception of Mr. Olliff's specimen from Cassilis. They were obtained a fortnight ago, under logs, and were the only specimens met with, though careful search was made. One of them has dark tints prevalent, the other has rusty red or brown most conspicuous; thus presenting the same considerable variation in colour as was pointed out on a previous occasion.

Mr. MacDonnell read a letter from Mr. Bostock of England, asking for Australian species of Oribatidæ, or for information bearing upon them.

WEDNESDAY, 26TH DECEMBER, 1888.

The Hon. William Macleay, F.L.S., in the Chair.

Mr. J. P. Creed, Barrister-at-Law, Double Bay, Sydney, and Mr. E. C. H. Chisholm, Ashfield, were elected Members of the Society.

The Chairman announced that the Annual Meeting would be held on Wednesday evening, January 30th, 1889, to take precedence of the Ordinary Monthly Meeting on the same date. Also that no Excursion would be held during the ensuing month.

DONATIONS.

"The Proceedings of the Royal Society of Queensland, 1887." (Vol. IV.) *From the Society.*

"Transactions of the Royal Society of Victoria." Vol. I., Part 1 (1888). *From the Society.*

"Iconography of Australian Species of ACACIA and Cognate Genera." Decade XIII. By Baron von Mueller, K.C.M.G., M. & Ph.D., F.R.S. *From the Premier of Victoria, through the Librarian, Public Library, Melbourne.*

"Department of Mines Sydney.—Memoirs of the Geological Survey of New South Wales.—Palæontology, No. 1"; Annual Report for the year 1887." *From the Minister for Mines.*

"Bericht über die Senckenbergische naturforschende Gesellschaft in Frankfurt am Main, 1888." *From the Society.*

"Proceedings of the Asiatic Society of Bengal, 1888." Nos. iv.-viii. (April-August); "Journal." n.s. Vol. LVII., Part i., Nos. 1 & 2; Part ii., Nos. 2 & 3 (1888). *From the Society.*

"The Victorian Naturalist." Vol. V., No. 8 (Dec., 1888). *From the Field Naturalists' Club of Victoria.*

"Feuille des Jeunes Naturalistes." No. 217 (November, 1888). *From the Editor.*

"Report of the Secretary for Mines on the Mineral Statistics of Victoria for the year 1887." *From the Secretary for Mines, Melbourne.*

"Anales del Museo Nacional Republica de Costa Rica." Tomo I., Parts 1 and 2 (1887). *From the Museum.*

"The American Naturalist." Vol. XXII., No. 261 (September, 1888). *From the Editors.*

"Geological and Natural History Survey of Canada—Catalogue of Canadian Plants, Part IV., Endogens." By John Macoun, M.A., F.L.S., F.R.S.C. *From the Director.*

"Proceedings of the American Philosophical Society." Vol. XXV., No. 127 (1888). *From the Society.*

"Annals of the New York Academy of Sciences." Vols. I.; II.; III. (Nos. 1-6); IV. (Nos. 3 & 4), (1877-88); "Transactions." Vols. I. (except No. 4); II.; VI.; VII. (Nos. 1 & 2), (1881-87). *From the Academy.*

"Annual Report of the Board of Regents of the Smithsonian Institution, 1885." Part II. *From the Secretary.*

"Johns Hopkins University, Baltimore.—Studies from the Biological Laboratory." Vol. IV., (Nos. 1 & 2), (1887); "University Circulars." Vols. VI., (Nos. 58 & 59); VII., (Nos. 60-64), (1887-88); "Observations on the Embryology of Insects and Arachnids." By Adam T. Bruce, B.A., Ph.D. (Memorial Volume). *From the University.*

"United States Geological Survey.—Mineral Resources of the United States, 1886." *From the Director.*

"Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, U.S.A." Vols. XIV. and XV.—["Three Cruises of the Blake."] *From the Curator.*

"Bulletin of the Scientific Laboratories of Denison University." Vol. III. (1888). *From the University.*

"Proceedings of the Academy of Natural Sciences of Philadelphia, 1887." Part 3; 1888. Part 1. *From the Academy.*

"Bulletin of the California Academy of Sciences." Vol. II. No. 8 (1887); "Memoirs." Vol. II., No. 1 (1888). *From the Academy.*

"Proceedings of the Canadian Institute, Toronto." 3rd Series. Vol. V., Fasc. No. 2 (1888); "Annual Report." Session 1886-87. *From the Institute.*

"Proceedings of the United States National Museum." Vol. X. (1887), [Sheets 44-45, Plates xxxvi.-xxxix]. *From the Museum.*

"Mémoires de l'Académie Impériale des Sciences de St.-Petersbourg." VII.^e Série, Tome XXXV., Nos. 4-10 (1887). *From the Academy.*

“Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien.” Jahrg. 1887. XXXVII. Band, Parts 3 and 4. *From the Society.*

“Annales de la Société Belge de Microscopie.” Tome XI. (1884-85). *From the Society.*

“Bidrag till Kännedom af Finlands Natur och Folk.” Häftet XLIV. (1887); “Exploration Internationale des Régions Polaires, 1882-83 et 1883-84. Expedition Polaire Finlandaise.” Tome II., Magnétisme Terrestre. *De la part de la Société des Sciences de Finlande.*

“Mémoires de la Société Zoologique de France pour l'Année 1888.” Tome I. No. 2. *From the Society.*

“Zoologischer Anzeiger.” XI. Jahrg., No. 292 (1888). *From the Editor.*

DESCRIPTIONS OF AUSTRALIAN MICRO-LEPIDOPTERA.

By E. MEYRICK, B.A., F.E.S.

XV. OECOPHORIDAE (*continued*).

584. (72b.) *Eulechria alopecistis*, n.sp.

♂. 17 mm. Head and thorax reddish-fuscous. Palpi fuscous irrorated with dark fuscous. Antennæ fuscous. Abdomen grey. Legs dark fuscous, posterior pair ochreous-whitish. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; rather dark reddish-fuscous: cilia reddish-fuscous. Hindwings grey, towards apex slightly reddish-tinged; cilia grey-whitish, base slightly reddish-tinged.

Melbourne, Victoria; one specimen (Coll. Lucas).

585. (104c.) *Eul. dryinodes*, n.sp.

♂. 23 mm. Head, palpi, and thorax fuscous, irrorated with black, and minutely sprinkled with ochreous-whitish; terminal joint of palpi suffused with dark fuscous, extreme apex whitish. Antennæ fuscous, ciliations 1. Abdomen pale greyish-ochreous. Legs rather dark fuscous, suffusedly ringed with ochreous-whitish (posterior pair broken). Forewings very elongate, rather narrow, costa moderately arched, apex obtuse, hindmargin very obliquely rounded; fuscous, mixed with whitish-ochreous and irrorated with dark fuscous; veins near hindmargin obscurely lined with dark fuscous; an irregular obscure blackish streak from base of costa to disc beyond middle, obscurely margined beneath with whitish-ochreous, irregularly interrupted with whitish-ochreous at $\frac{1}{3}$, and

terminating in a suffused obscure small subrescenscent whitish-ochreous spot; two discal dots very obscurely indicated beneath this; a faint darker line from costa beyond middle to near apex, thence angulated to inner margin before anal angle: cilia fuscous-whitish, tips ochreous-whitish, basal half irrorated with dark fuscous. Hindwings pale whitish-fuscous, ochreous-tinged, towards apex slightly darker; cilia ochreous-whitish, with an obscure fuscous line.

Victoria (probably near Melbourne); one specimen (Coll. Lucas).

586. (107a.) *Eul. chari erga*, n.sp.

♂♀. 12-14 mm. Head and thorax white, sometimes sprinkled with ochreous, edge of shoulder black. Palpi white, in ♂ with basal $\frac{2}{3}$ of second joint and apex of terminal joint black, sometimes with two additional black rings between these, in ♀ wholly irregularly sprinkled with black. Antennæ fuscous, very obscurely ringed with whitish, ciliations in ♂ 1. Abdomen pale grey, anal tuft ochreous-tinged. Legs dark fuscous ringed with whitish, posterior pair ochreous-grey-whitish. Forewings very elongate, narrow, costa gently arched, apex rounded, hindmargin extremely obliquely rounded; white, more or less irregularly and suffusedly irrorated with ochreous, and with a very few black scales; a black dot on base of costa; a second on base of inner margin (in ♀ specimen absent); a very small oblique black spot on costa at $\frac{1}{4}$; a more or less elongate blackish spot on costa about middle; a black dot in disc at $\frac{1}{3}$, a second obliquely before it on fold, and a third, larger, in disc at $\frac{2}{3}$; a cloudy outwards-curved line of blackish scales from $\frac{1}{4}$ of costa to anal angle, suffused and somewhat dilated on upper half, tending to form a small black spot on costa: cilia ochreous-grey-whitish, base more ochreous, with a very indistinct cloudy grey line. Hindwings pale grey; cilia ochreous-grey-whitish.

Bathurst, New South Wales (2500 feet); Deloraine, Tasmania; Perth, West Australia; five specimens, in October and November.

There appears to be some variability in certain details of marking, as in the palpi.

587. (107b.) *Eul. stenota*, n.sp.

♂. 12mm. Head white, with a few fuscous scales. Palpi white, basal half and a subapical ring of second joint, and a subbasal ring and apex of terminal joint ochreous-brown mixed with black. Antennæ white, ringed with pale fuscous, ciliations 1. Thorax ochreous irregularly mixed with white. Abdomen whitish-ochreous. Legs dark ochreous-fuscous, obscurely ringed with white, posterior pair ochreous-whitish. Forewings very elongate, narrow, costa moderately arched, apex rounded, hind-margin extremely obliquely rounded; white, irregularly irrorated with ochreous; a short black very oblique streak from base of costa; an irregular black dot on costa at $\frac{1}{2}$, two black dots placed one directly beneath the other in disc at $\frac{2}{5}$, and some black scales towards inner margin, all united with an ochreous suffusion into an obscure fascia; a subquadrate blackish spot on costa beyond middle; an irregular black dot in disc at $\frac{3}{8}$; some black scales towards costa before apex: cilia ochreous-whitish, towards base white irrorated with ochreous. Hindwings pale grey; cilia ochreous-whitish.

Sydney, New South Wales; Perth, West Australia; two specimens, in October and November. This and the preceding are easily recognised by their narrow wings and black costal spots.

I add here, as promised, a tabulation of the 93 described species of *Eulechria*.

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|---|-----------------------|
| 1. Forewings wholly unicolorous, without marking..... | 2. |
| Forewings not unicolorous..... | 11. |
| 2. Forewings clear white | 3. |
| Forewings not clear white..... | 5. |
| 3. Cilia of hind wings yellow towards base | 113. <i>acerasa</i> . |
| Cilia of hind wings not yellow towards base..... | 4. |

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| 4. Thorax greyish..... | 108. | <i>leucophanes</i> . |
| Thorax white..... | 583. | <i>cynoptera</i> . |
| 5. Forewings reddish-fuscous..... | 584. | <i>alopecistis</i> . |
| Forewings not reddish-fuscous..... | 6. | |
| 6. Forewings grey..... | 569. | <i>glaphyrotia</i> . |
| Forewings not grey..... | 7. | |
| 7. Cilia of hindwings grey..... | 582. | <i>homochalca</i> . |
| Cilia of hindwings not grey..... | 8. | |
| 8. Head yellowish..... | 78. | <i>pantelella</i> . |
| Head not yellowish..... | 9. | |
| 9. Forewings ochreous-whitish..... | 10. | |
| Forewings grey-whitish..... | 546. | <i>autophylla</i> . |
| 10. Hindwings with posterior half suffused with grey..... | 77. | <i>pallidella</i> . |
| Hindwings with posterior half not suffused with grey..... | 574. | <i>irenaea</i> . |
| 11. Forewings white with entire dark vertical antemedian fascia..... | 12. | |
| Forewings not white with entire dark vertical antemedian fascia..... | 17. | |
| 12. Fascia dark fuscous..... | 13. | |
| Fascia bright ochreous-brown..... | 14. | |
| 13. Thorax with white anterior spot..... | 82. | <i>triferella</i> . |
| Thorax wholly dark fuscous..... | 561. | <i>epiphragma</i> . |
| 14. Anterior margin of thorax ochreous- brown..... | 15. | |
| Anterior margin of thorax white..... | 16. | |
| 15. Forewings with posterior fascia hind- marginal..... | 563. | <i>tropica</i> . |
| Forewings with posterior fascia sub- marginal..... | 562. | <i>schalidota</i> . |
| 16. Cilia of forewings with basal half dark fuscous mixed with whitish..... | 84. | <i>epicausta</i> . |
| Cilia of forewings wholly yellow-whitish except apex and anal angle..... | 83. | <i>brachypepla</i> . |

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| 17. Forewings bright orange-yellow..... | 18. |
| Forewings not orange-yellow... .. | 19. |
| 18. Forewings with apical third reddish-ochreous-brown..... | 549. <i>malacoptera</i> . |
| Forewings with apical third not reddish-ochreous-brown..... | 550. <i>heliodora</i> . |
| 19. Forewings with a well-defined dark subcostal streak..... | 20. |
| Forewings without a well-defined dark subcostal streak..... | 21. |
| 20. Forewings with costa white | 578. <i>callisceptr</i> a. |
| Forewings with costa light brown..... | 579. <i>phaeosceptr</i> a. |
| 21. Forewings with well-defined white costal streak... .. | 22. |
| Forewings without well-defined white costal streak..... | 23. |
| 22. Costal streak extending to about $\frac{2}{3}$ | 581. <i>homoxesta</i> . |
| Costal streak extending almost to apex | 580. <i>thrincoctis</i> . |
| 23. Head and thorax wholly orange-yellow | 551. <i>cephalanthes</i> . |
| Head and thorax not orange-yellow ... | 24. |
| 24. Cilia of forewings clear bright pale rosy | 552. <i>eocrossa</i> . |
| Cilia of forewings not bright pale rosy | 25. |
| 25. Forewings with yellow transverse median fascia..... | 558. <i>xanthostephana</i> . |
| Forewings without yellow transverse median fascia..... | 26. |
| 26. Hindwings wholly ochreous-whitish, without grey tinge..... | 576. <i>cholero</i> des. |
| Hindwings not ochreous-whitish, without grey tinge..... | 27. |
| 27. Cilia of forewings ochreous-yellow..... | 85. <i>chlorella</i> . |
| Cilia of forewings not ochreous-yellow | 28. |
| 28. Forewings with large sharply marked dark dorsal blotch | 540. <i>camelae</i> a. |
| Forewings without large sharply marked dark dorsal blotch | 29. |

29. Forewings with normal discal dots generally obsolete or represented by one posterior only 30.
 Forewings with normal dots sufficiently distinct 38.
30. Forewings with anterior half yellowish, posterior fuscous..... 560. *hemicarpa*.
 Forewings without anterior half yellowish, posterior fuscous..... 31.
31. Forewings nearly uniform dark fuscous 548. *heliocoma*.
 Forewings not uniform dark fuscous... 32.
32. Forewings ochreous - yellowish, with fuscous markings..... 559. *gonosema*.
 Forewings not ochreous-yellowish, with fuscous markings..... 33.
33. Forewings white, with transverse fuscous markings..... 564. *phaeostephes*.
 Forewings not with transverse fuscous markings..... 34.
34. Forewings nearly uniform pale fuscous 547. *homoteles*.
 Forewings not uniform pale fuscous... 35.
35. Forewings extremely elongate..... 36.
 Forewings not extremely elongate..... 92. *lividella*.
36. Forewings with suffused darker costal streak 112. *sciophanes*.
 Forewings without suffused darker costal streak 37.
37. Forewings with suffused darker subcostal streak..... 577. *halmopeda*.
 Forewings without suffused darker subcostal streak 575. *hyperchlora*.
38. Forewings with normally three discal dots (arranged 2, 1) 39.
 Forewings with normally five or six discal dots, arranged in an oval..... 66.

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|---|---------------------------|
| 39. Forewings with narrow black fascia near base..... | 74. <i>episema</i> . |
| Forewings without narrow black fascia near base..... | 40. |
| 40. Forewings with short black subcostal strigula from base | 41. |
| Forewings without short black subcostal strigula from base. | 43. |
| 41. Forewings irrorated with ochreous.... | 587. <i>stenota</i> . |
| Forewings irrorated with grey..... | 42. |
| 42. Cilia of hindwings yellowish | 572. <i>diagramma</i> . |
| Cilia of hindwings whitish..... | 573. <i>athletis</i> . |
| 43. Hindwings dark grey..... | 44. |
| Hindwings not dark grey..... | 45. |
| 44. Forewings brown..... | 72. <i>xophoëssa</i> . |
| Forewings grey..... | 102. <i>cimmeriella</i> . |
| 45. Forewings rosy-tinged | 46. |
| Forewings not rosy-tinged..... | 47. |
| 46. Forewings with posterior line distinct | 544. <i>eriphila</i> . |
| Forewings with posterior line obsolete | 80. <i>puellaris</i> . |
| 47. Hindwings yellowish-tinged | 95. <i>calotrophæ</i> . |
| Hindwings not yellowish-tinged..... | 48. |
| 48. Costa with well-defined black spots.... | 586. <i>chariærga</i> . |
| Costa without well-defined black spots | 49. |
| 49. Forewings with two upper discal dots large, lower obsolete..... | 50. |
| Forewings not with two upper discal dots large, lower obsolete..... | 51. |
| 50. Forewings dark fuscous..... | 554. <i>ophthalmias</i> . |
| Forewings pale yellowish | 553. <i>amphidyas</i> . |
| 51. Forewings with costa suffusedly blotched with darker..... | 52. |
| Forewings with costa not suffusedly blotched with darker | 53. |
| 52. Posterior discal dot double..... | 571. <i>mochlastis</i> . |
| Posterior discal dot single..... | 100. <i>photinella</i> . |

53. Posterior line sharply indented beneath
 costa 556. *graphica*.
 Posterior line not sharply indented
 beneath costa 54.
54. Head whitish.. 76. *exanimis*.
 Head not whitish 55.
55. Head yellowish 101. *paurogramma*.
 Head not yellowish..... 56.
56. Posterior line obsolete..... 81. *achalinella*.
 Posterior line distinct..... 57.
57. Head whitish-ochreous 58.
 Head fuscous or grey 59.
58. Posterior line running to middle of
 inner margin 73. *melesella*.
 Posterior line running to before anal
 angle..... 75. *convictella*.
59. Discal dots suberescentic, posteriorly
 white-edged..... 543. *menodes*
 Discal dots not suberescentic, pos-
 teriorly white-edged... 60.
60. Forewings very elongate..... 109. *aërodes*.
 Forewings moderate..... 61.
61. Forewings grey 62.
 Forewings whitish-grey, ochreous-
 tinged..... 69. *griseola*.
 Forewings ochreous 64.
62. Forewings rather dark grey..... 71. *cremnodes*.
 Forewings glossy light grey..... 63.
63. Anterior discal dots connected with
 inner margin by a streak..... 541. *ichneuta*.
 Anterior discal dots not connected with
 inner margin by a streak..... 79. *leptobela*.
64. Forewings with an interrupted dark
 mark from inner margin near base. 70. *nephelopa*.
 Forewings without an interrupted dark
 mark from inner margin near base. 65.

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|---|----------------------------|
| 65. Expanse of wings 24mm. | 542. <i>pelodora</i> . |
| Expanse of wings 13mm. | 545. <i>aphaura</i> . |
| 66. Forewings with an interrupted longitudinal black median line..... | 67. |
| Forewings without an interrupted longitudinal black median line..... | 68. |
| 67. Forewings whitish..... | 103. <i>xylopterella</i> . |
| Forewings reddish-fuscous | 555. <i>mesophragma</i> . |
| 68. Head white or yellowish..... | 69. |
| Head greyish..... | 81. |
| 69. Hindwings orange-yellow, with dark fuscous apex | 93. <i>philotherma</i> . |
| Hindwings not orange-yellow, with dark fuscous apex | 70. |
| 70. Hindwings more or less tinged uniformly with tawny or orange..... | 71. |
| Hindwings not more or less tinged uniformly with tawny or orange... | 27. |
| 71. Forewings with white markings..... | 89. <i>leucopelta</i> . |
| Forewings without white markings... | 94. <i>brontomorpha</i> . |
| 72. Forewings with black subbasal fascia | 86. <i>transversella</i> . |
| Forewings without black subbasal fascia..... | 73. |
| 73. Forewings with groundcolour wholly ochreous-yellow..... | 90. <i>poecilella</i> . |
| Forewings with groundcolour not wholly ochreous-yellow..... | 74. |
| 74. Forewings with dorsal half ochreous-yellowish..... | 565. <i>elaeota</i> . |
| Forewings with dorsal half not ochreous-yellowish | 75. |
| 75. Markings of forewings brown..... | 76. |
| Markings of forewings grey..... | 77. |
| 76. Thorax wholly white except on sides... | 87. <i>variegata</i> . |
| Thorax not white except on sides..... | 91. <i>habrophanes</i> . |

77. Forewings with a whitish spot on costa
at $\frac{3}{4}$ 78.
Forewings without a whitish spot on
costa at $\frac{3}{4}$ 80.
78. Cilia of hindwings more or less ochreous-whitish near anal angle..... 567. *callimeris*.
Cilia of hindwings not more or less
ochreous-whitish near anal angle... 79.
79. Forewings with a narrow entire grey
costal streak to $\frac{3}{4}$ 566. *cataplasta*.
Forewings with a broader interrupted
streak..... 88. *hemiphanes*.
80. Cilia of hindwings yellowish..... 568. *xanthocrossa*.
Cilia of hindwings not yellowish..... 111. *ombrophora*.
81. Forewings with a small clear black spot
on inner margin near base..... 557. *delotis*.
Forewings without a small clear black
spot on inner margin near base..... 82.
82. Forewings with a blackish subbasal
fascia..... 570. *archepeda*.
Forewings without a blackish subbasal
fascia..... 83.
83. Forewings with a cloudy whitish median
streak..... 98. *dolosella*.
Forewings without a cloudy whitish
median streak..... 84.
84. Forewings suffused with blackish..... 107. *perdita*.
Forewings not suffused with blackish.. 85.
85. Hindwings dark fuscous..... 110. *tanyscia*.
Hindwings not dark fuscous..... 86.
86. Forewings with posterior line indented
beneath costa..... 87.
Forewings with posterior line not indented
beneath costa..... 90.
87. Cilia of hindwings whitish..... 105. *grammatica*.
Cilia of hindwings grey..... 88.

88. Costa of forewings with two distinct
cloudy darker spots..... 96. *philostaura*.
Costa of forewings without two distinct
cloudy darker spots..... 89.
89. Forewings rather short, without white
scales 97. *amarura*.
Forewings elongate, usually with white
scales..... 99. *adoxella*.
90. Forewings brown..... 585. *dryinodes*.
Forewings grey..... 91.
91. Discal dots longitudinally elongate.... 106. *scopariella*.
Discal dots not longitudinally elongate 104. *siccella*.

OENOCHROA, Meyr.

588. (118a.) *Oen. dinosema*, n.sp.

♂. 22 mm. Head and thorax dark fuscous, sprinkled with grey-whitish. Palpi grey, somewhat mixed with whitish. Antennæ grey-whitish. (Abdomen broken). Legs dark fuscous, posterior pair ochreous-grey-whitish. Forewings elongate, costa rather strongly arched, apex round-pointed, hindmargin very obliquely rounded; grey, with a few dark fuscous scales; an oblique cloudy blackish streak from base of costa to $\frac{1}{3}$ of disc, followed by a triangular cloudy faintly coppery-tinged fuscous patch extending to near middle of costa; posterior edge of patch marked by an obscure dark fuscous spot on costa and an angulated obscure blackish mark on lower angle; a black dot in disc below middle, nearly touching a blackish inwardly angulated line from $\frac{2}{3}$ of costa to anal angle; apical area beyond this line wholly fuscous, faintly coppery-tinged, except a narrow subcrescentic grey mark immediately following line in disc; a hind marginal series of light grey dots, obscurely separated with dark fuscous: cilia light fuscous-grey, with a cloudy row of whitish points. Hindwings rather light fuscous-grey, towards apex somewhat darker; cilia whitish-fuscous, towards anal angle paler and more ochreous-tinged.

Victoria; one specimen (Coll. Lucas).

589. (119a.) *Oen. heptarcha*, n. sp.

♂. 25 mm. Head, palpi, and thorax dark fuscous irrorated with white. Antennæ whitish-grey. Abdomen ochreous-yellowish. Legs dark fuscous irrorated with white, posterior pair ochreous-yellowish. Forewings very elongate, costa moderately arched, apex round-pointed, hindmargin extremely obliquely rounded; dark fuscous-grey, thinly sprinkled with white; a short cloudy dark fuscous mark from costa near base; a cloudy dark fuscous oblique spot on costa at $\frac{1}{2}$, followed by a cloudy whitish suffusion, tending to be faintly produced posteriorly so as to enclose a very elongate semi-oval slightly darker space on costa beyond middle; a black dot in disc at $\frac{1}{3}$, a second on fold rather obliquely beyond it, a third beyond and slightly above first, a fourth beyond third, a fifth beneath fourth, a sixth beyond fifth, and two others transversely placed in disc at $\frac{2}{3}$, beyond and above sixth: cilia grey, somewhat mixed with grey-whitish. Hindwings rather light grey, tinged with ochreous; cilia pale whitish-ochreous, base more yellow-ochreous.

Geraldton, West Australia; one specimen in November.

PLACOCOSMA, Meyr.

590. (122a.) *Plac. meridarcha*, n.sp.

♂. 25 mm. Head ochreous-white. Palpi ochreous-white, lower half of second joint dark fuscous. Antennæ dark fuscous. Thorax dark fuscous, apex of patagia white. Abdomen ochreous-yellowish, segments suffused with dark grey towards base. Anterior legs dark fuscous ringed with yellowish, middle legs light ochreous-yellowish ringed with dark fuscous, posterior legs ochreous-yellowish. Forewings elongate, costa gently arched, apex obtuse, hindmargin obliquely rounded; white, suffused with pale ochreous-yellowish except on margins of markings; four moderate rather irregular dark fuscous fasciæ, somewhat dilated on costa; first from base of costa, second from $\frac{2}{3}$ of costa, confluent on lower half and running to about $\frac{2}{3}$ of inner margin; third from costa

beyond middle, fourth from costa before apex, confluent on lower half, running to about anal angle, where they include a small spot of groundcolour, fourth indistinctly interrupted about middle: cilia ochreous-yellowish, irregularly suffused with dark grey except at apex and anal angle. Hindwings rather dark bronzy-grey; cilia ochreous-yellowish suffused with grey, with a cloudy darker grey line near base.

Glen Innes (4500 feet), New South Wales; one specimen, in December.

LINOSTICHA, Meyr.

Recent discoveries have much enlarged this genus, which appears to have attained considerable development in West Australia. The following is a tabulation of all the described species; including *Peltophora orthogramma*, which is correctly referable here.

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|---|---------------------------|
| 1. Forewings unicolorous, or at most with one discal dot | 2. |
| Forewings not unicolorous, or at most with one discal dot | 4. |
| 2. Forewings white | 598. <i>cynodes</i> . |
| Forewings not white | 3. |
| 3. Forewings blue-grey | 599. <i>epixesta</i> . |
| Forewings ochreous-grey | 126. <i>scythropea</i> . |
| 4. Forewings yellow | 5. |
| Forewings not yellow | 7. |
| 5. Apex of hindwings yellow | 596. <i>mechanica</i> . |
| Apex of hindwings not yellow | 6. |
| 6. Apex of forewings yellow | 597. <i>monozona</i> . |
| Apex of forewings purplish | 251. <i>orthogramma</i> . |
| 7. Forewings with well-marked fuscous subcostal streak | 600. <i>leucocrossa</i> . |
| Forewings without well-marked fuscous subcostal streak | 8. |
| 8. Forewings with groundcolour white or whitish | 9. |

- Forewings with groundcolour not white
or whitish.. 11.
9. Forewings with well-marked dark trans-
verse fasciæ..... 595. *cyclophragma*.
- Forewings without well-marked dark
transverse fasciæ..... 10.
10. Forewings with dark dorsal patch
towards base..... 127. *canephora*.
- Forewings without dark dorsal patch
towards base..... 602. *helictis*.
11. Forewings with a white patch towards
base 604. *suppletella*.
- Forewings without a white patch towards
base..... 12.
12. Forewings with pale ochreous-yellowish
markings..... 603. *anarcha*.
- Forewings without pale ochreous-
yellowish markings..... 13.
13. Forewings with blackish subbasal fascia 593. *anadesma*.
- Forewings without blackish subbasal
fascia 14.
14. Forewings with a short whitish longi-
tudinal streak in disc 594. *stadiota*.
- Forewings without a short whitish longi-
tudinal streak in disc..... 15.
15. Palpi wholly pale grey..... 601. *hypnotis*.
- Palpi not pale grey. 16
16. Antennæ white..... 591. *argolina*.
- Antennæ fuscous..... 592. *nomistis*.

591. (125a.) *Lin. argolina*, n.sp.

♂. 19 mm. Head and thorax fuscous. Palpi white, second joint with lower $\frac{2}{3}$ and an apical ring dark grey. Antennæ white. Abdomen whitish-grey. Legs dark grey, posterior pair grey-whitish. Forewings elongate, posteriorly moderately

dilated, costa gently arched, apex rounded, hindmargin nearly straight, oblique, rounded beneath; light fuscous, irrorated with darker; a black dot in disc at $\frac{2}{5}$, a second on fold beneath first, and two transversely placed near together in disc beyond middle; three very indistinct short longitudinal dark marks above anal angle; a transverse series of subcrescentic blackish dots from $\frac{3}{4}$ of costa to inner margin before anal angle, very strongly curved outwards, abruptly indented above middle: cilia whitish-grey, basal half irrorated with fuscous. Hindwings grey, towards base somewhat paler; cilia whitish-grey, basal half greyer.

Albany, West Australia; in December, one specimen. Very similar to the following, but readily separated by the peculiar white antennæ.

592. (125b.) *Lin. nomistis*, n.sp.

♂. 16-20 mm. Head, antennæ, and thorax fuscous. Palpi white, lower half of second joint dark fuscous. Abdomen fuscous-whitish. Legs dark fuscous, apex of joints whitish, posterior pair fuscous-whitish. Forewings elongate, posteriorly moderately dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; rather light greyish-fuscous, with a few scattered dark fuscous scales; a dark fuscous dot in disc at $\frac{1}{3}$, a second on fold beneath first, and a third in disc at $\frac{2}{3}$; an indistinct, sometimes obsolete, line of dark fuscous scales from $\frac{3}{4}$ of costa to inner margin before anal angle, strongly curved outwards, rather abruptly indented above middle: cilia light fuscous, basal half sprinkled with dark fuscous. Hindwings grey or fuscous-grey; cilia light grey, basal half suffusedly darker.

Geraldton and Perth, West Australia; in October and November, three specimens.

593. (125c.) *Lin. anadesma*, n.sp.

♂. 19 mm. Head whitish-ochreous. Palpi ochreous-whitish, second joint dark fuscous except apex, apex of terminal joint

dark fuscous. Antennæ and thorax fuscous. Abdomen ochreous-whitish. Legs dark fuscous, apex of joints and posterior pair ochreous-whitish. Forewings elongate, posteriorly moderately dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; whitish-fuscous, sprinkled with darker fuscous, and with a few black scales; a slender blackish fascia almost at base; two small black dots transversely placed near together beyond this; a slender black transverse bar in disc at $\frac{1}{3}$, not reaching either margin; a slender black bar from rather near costa at $\frac{2}{3}$ to anal angle; a series of irregular black dots from costa near before apex to anal angle, bent so as to approach very closely to hindmargin, abruptly indented beneath costa; some cloudy black dots on posterior third of costa: cilia fuscous-whitish, sprinkled with fuscous. Hindwings pale grey; cilia grey-whitish.

Sale, Victoria; one specimen (Coll. Lucas).

594. (125d.) *Lin. stadiota*, n.sp.

♂♀. 17-19 mm. Head, palpi, and thorax grey mixed with white. Antennæ whitish. Abdomen whitish-grey. Legs dark grey, apex of joints white, posterior pair ochreous-white. Forewings elongate, posteriorly scarcely dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; fuscous-grey, with some scattered black scales, suffusedly streaked with white between veins; an indistinct short oblique blackish streak from base of costa; a moderately large black dot in disc at $\frac{2}{3}$, and a second beyond middle, connected by a white streak; a third on fold beneath and slightly beyond first, followed by a short white dash, terminating in a fourth dot; a moderately large black dot on costa before middle, whence proceeds a series of black dots close beneath costa to near apex, thence sharply bent and continued very near hindmargin to fourth discal dot; a cloudy black dot on inner margin before middle: cilia grey-whitish, base faintly fuscous-tinged, basal half indistinctly barred with grey and bounded by a cloudy interrupted darker grey line. Hindwings pale grey; cilia whitish, with an indistinct grey line.

Albany, West Australia, in December ; very common on fences beneath *Eucalyptus*.

595. (125e.) *Lin. cyclophragma*, n.sp.

♂♀. 18-21 mm. Head ochreous-yellow. Palpi yellowish-white, basal $\frac{2}{3}$ of second joint, and anterior edge of terminal joint dark fuscous. Antennæ and thorax dark fuscous. Abdomen whitish-ochreous, base of segments grey. Legs dark fuscous, middle pair suffused with yellowish towards apex of joints, posterior pair ochreous-yellowish. Forewings moderately broad, costa moderately arched, apex obtuse, hindmargin rather oblique, nearly straight, rounded beneath ; white, sometimes faintly ochreous-tinged ; markings dark ochreous-brown ; a small mark on base of inner margin ; a rather inwardly oblique rather narrow bar from inner margin at $\frac{1}{4}$, reaching $\frac{2}{3}$ across wing ; a rather narrow straight fascia from $\frac{2}{3}$ of costa to beyond middle of inner margin ; a fascia from $\frac{2}{3}$ of costa to anal angle, rather narrow at extremities, remainder dilated into an oval patch which includes a similar smaller white patch ; a streak round apex and upper half of hindmargin, broadest at apex, attenuated to extremities : cilia white, base more or less strongly ochreous-tinged. Hindwings rather light fuscous-grey ; cilia whitish-ochreous, tips paler.

Bathurst (2700 feet), New South Wales, in February and March ; five specimens sent by Mrs. Stephenson.

596. (125f.) *Lin. mechanica*, n.sp.

♂. 21 mm. Head ochreous-yellow. Palpi ochreous-yellow, basal half of second joint dark fuscous. Antennæ dark fuscous. Thorax dark fuscous, posterior margin rather broadly pale ochreous-yellowish. Abdomen rather dark fuscous, lateral margins ochreous-yellowish. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex rounded, hindmargin obliquely rounded ; dark fuscous ; markings light ochreous-yellow ; a narrow streak along costa from base to $\frac{5}{8}$, rather dilated towards base, where it touches

inner margin ; a quadrate patch extending on inner margin from middle to near anal angle, its upper side triangularly emarginate, angles nearly reaching costal streak ; a rather broad fascia from posterior end of costal streak to lower half of hindmargin : cilia dark fuscous. Hindwings dark fuscous ; apical fourth ochreous-yellow, with a few dark fuscous scales ; cilia dark fuscous.

Mount Lofty, South Australia ; one specimen.

597. (125g.) *Lin. monozona*, n.sp.

♂♀. 15-17 mm. Head ochreous-yellow. Palpi dark grey, base and posterior edge pale yellowish. Antennæ dark grey. Thorax dark grey, purplish-tinged, posterior margin rather broadly pale ochreous-yellowish. Abdomen grey, segmental margins yellowish. Legs dark grey, posterior pair pale ochreous-yellowish. Forewings elongate, costa moderately arched, apex pointed, hindmargin faintly sinuate, rather strongly oblique ; pale ochreous-yellow ; a slender ill-defined deep purple fascia from $\frac{2}{3}$ of costa to inner margin before anal angle, lower half sinuate outwards : cilia pale grey. Hindwings rather dark grey ; cilia pale grey, slightly ochreous-tinged, with a cloudy darker grey line near base.

Perth and York, West Australia ; in November, six specimens. *L. orthogramma* is closely allied to this, and should be placed next it.

598. (125h.) *Lin. cynodes*, n.sp.

♂. 20 mm. Head ochreous-yellow, face whitish. Palpi white, anterior edge of terminal joint grey. Antennæ grey, base white. Thorax, abdomen, and legs greyish-white. Forewings elongate, costa gently arched, apex rounded, hindmargin obliquely rounded ; silvery-white ; a grey dot in disc at $\frac{2}{3}$: cilia silvery-white. Hindwings light grey, more whitish-grey towards base ; cilia white.

Perth, West Australia ; one specimen, in November.

599. (125k.) *Lin. epixesta*, n.sp.

♀. 22 mm. Head, palpi, and thorax bluish-white finely and densely irrorated with dark grey. Antennæ grey, base white.

Abdomen pale greyish-ochreous. Anterior legs grey, middle and posterior pairs whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very oblique, slightly rounded; bluish-white, finely and densely irrorated with dark grey, appearing light bluish-grey: cilia bluish-white, basal half irrorated with grey. Hindwings brownish-grey; cilia whitish-ochreous-grey.

York, West Australia; in November, one specimen.

600. (126a.) *Lin. leucocrossa*, n.sp.

♂. 16-17 mm. Head and palpi ochreous-fuscous, face whitish. Antennæ grey. Thorax light ochreous-fuscous, posterior extremity sometimes whitish. Abdomen whitish-ochreous. Legs fuscous, posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex obtuse, hindmargin obliquely rounded; very pale greyish-ochreous, with a few fuscous scales; a rather narrow white streak along costa from base to apex, margined beneath by a broad ochreous-fuscous streak throughout; an indistinct ochreous-fuscous suffusion towards inner margin on basal half; a cloudy roundish ochreous-fuscous spot above anal angle; a series of ill-defined ochreous-fuscous dots from subcostal streak near apex to anal angle, and a similar series along hindmargin, nearly confluent: cilia white. Hindwings very pale brownish-ochreous; cilia white, towards anal angle ochreous-tinged.

Carnarvon, West Australia; in October, two specimens beaten from a shrub which I could not identify, as it was not in flower or fruit, but possibly one of the *Myrtaceae*; I observed only two plants of it; it may have been a more inland species.

601. (126b.) *Lin. hypnotis*, n.sp.

♂♀. 17-18 mm. Head and thorax pale grey. Palpi and antennæ whitish-grey. Abdomen pale whitish-ochreous. Legs ochreous-whitish, anterior pair grey. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin very oblique, slightly rounded; light shining grey; a small irregular black dot

beneath costa at $\frac{2}{3}$; an irregular black dot in disc at $\frac{2}{3}$, and a second at $\frac{3}{4}$; some black scales forming an indistinct suffusion on inner margin towards middle; a series of small indistinct black dots from costa beyond middle very obliquely outwards, sharply bent round in middle and terminating in anal angle, but nearly obsolete on lower half: cilia whitish-grey. Hindwings pale ochreous-grey, paler and more whitish-ochreous towards base; cilia ochreous-grey-whitish.

Geraldton, West Australia; in November, two specimens.

602. (126c.) *Lin. helictis*, n.sp.

♂. 17-18 mm. Head, antennæ, and thorax whitish. Palpi white, second joint with a cloudy grey median suffusion. Abdomen grey-whitish. Legs whitish, anterior pair grey. Forewings elongate, costa moderately arched, apex obtuse, hindmargin oblique, slightly rounded; whitish; a small black dot beneath costa near base, a second in disc beyond first, a third beneath costa at $\frac{2}{3}$, a fourth in disc at $\frac{2}{3}$, and two others transversely placed in disc at $\frac{3}{4}$; a small grey cloud beneath middle of costa; a cloudy light grey semi-oval patch extending along inner margin from $\frac{2}{3}$ to anal angle, sometimes mixed with reddish, irregularly interrupted so as to form three unequal spots, middle one largest; a series of black dots from beyond middle of costa very obliquely outwards, sharply bent round in middle and terminating in anal angle, indented inwards below middle; a series of black dots along hindmargin and apical third of costa: cilia whitish. Hindwings pale whitish-grey; cilia whitish.

Fremantle and Albany, West Australia; from October to December, three specimens.

603. (127a.) *Lin. anarcha*, n.sp.

♂. 12 mm. Head, palpi, and thorax pale ochreous-yellowish, mixed with dark fuscous. Antennæ pale yellowish, annulated with dark fuscous. Abdomen ochreous-yellow. Legs fuscous, apex of joints pale yellowish, posterior pair pale whitish-yellowish.

Forewings elongate, rather narrow, costa gently arched, apex rounded, hindmargin very obliquely rounded; fuscous, sprinkled with dark fuscous, and with some yellowish scales; an irregular black spot on base of costa, and another on inner margin near base; three irregular equidistant black spots on fold, connected by a pale yellowish streak; three irregular black spots in a longitudinal series in disc, connected by a pale yellowish streak which is dilated before and above second; a pale ochreous-yellowish spot on costa towards apex; an indistinctly indicated angulated posterior series of black dots: cilia light ochreous-yellowish mixed with fuscous. Hindwings fuscous, base obscurely whitish-ochreous; cilia whitish-ochreous, round apex more or less suffused with fuscous.

Bulli, New South Wales; in October, two specimens.

604. (127b.) *Lin. suppletella*, Walk.

(*Gelechia suppletella*, Walk. 645.)

♂♀. 11-12 mm. Head, thorax, and abdomen dark fuscous, apical half of patagia yellow-whitish. Palpi ochreous-whitish sprinkled with black. Antennæ yellow-whitish, annulated with black. Legs dark fuscous, apex of joints and hairs of posterior tibiæ whitish. Forewings elongate, rather narrow, costa slightly arched, apex rounded, hindmargin very obliquely rounded; fuscous-grey, irrorated with dark fuscous; a roundish ochreous-white patch near base, extending from inner margin to near costa; a small indistinct whitish spot on costa before middle; a whitish streak along fold, separated from the white patch by a dark fuscous dot, and again interrupted by a dark fuscous dot near anal angle; a transverse white spot from costa near apex, adjoining which anteriorly is an obscure dark fuscous dot in disc: cilia light fuscous-grey, basal $\frac{2}{3}$ irrorated with blackish, extreme tips whitish. Hindwings rather dark fuscous; cilia fuscous.

Deloraine, Tasmania; Mount Gambier, South Australia; two specimens in November, apparently attached to *Acacia melanoxylon*.

24.* TRACHYNTIS, n.g.

Head smooth, sidetufts loosely spreading; tongue developed. Antennæ in ♂ serrate, moderately ciliated (1), basal joint moderately elongate, with strong pecten. Labial palpi long, recurved, second joint thickened with dense scales, rather rough beneath, terminal joint shorter than second, anteriorly rather roughened with scales, acute. Thorax smooth. Posterior tibiae clothed with long dense hairs. Forewings with vein 1 furcate, 2 from near angle, 7 and 8 stalked, 7 to apex. Hindwings elongate-ovate or ovate-lanceolate, cilia $\frac{1}{2}$ -1; veins 3 and 4 from a point, 6 and 7 parallel.

In the tabulation it falls under the same head with *Eulechria*, to which it is closely allied, being distinguished by the anteriorly roughened terminal joint of palpi.

The following species are all West Australian.

- | | |
|--|--------------------------|
| 1. Forewings transversely fasciated..... | 606. <i>delophanes</i> . |
| Forewings not transversely fasciated.... | 2. |
| 2. Forewings with white discal dots..... | 607. <i>metrospila</i> . |
| Forewings without white discal dots ... | 3. |
| 3. Forewings dark fuscous | 605. <i>hyperopta</i> . |
| Forewings not dark fuscous | 4. |
| 4. Forewings with groundcolour pale ochreous | 609. <i>coenodes</i> . |
| Forewings with groundcolour pale grey | 608. <i>epiphaula</i> . |

605. (127c.) *Trach. hyperopta*, n.sp.

♂. 22 mm. Head and thorax dark fuscous. Palpi dark fuscous, extreme apex of second and terminal joints ochreous-whitish. Antennæ greyish-ochreous, towards base dark fuscous. Abdomen pale grey. Legs blackish, apex of joints and hairs of posterior tibiae ochreous-whitish. Forewings elongate, posteriorly moderately dilated, costa moderately arched, apex obtuse, hindmargin rather obliquely rounded; dark fuscous; a few pale greyish-ochreous scales on fold and above anal angle; a small hardly darker

spot on disc at $\frac{2}{3}$, and another at $\frac{3}{4}$, connected by a slender streak of pale greyish-ochreous scales: cilia light greyish-ochreous, with a fuscous-grey line, and barred with fuscous-grey. Hindwings fuscous-grey, rather paler towards base; cilia ochreous-grey-whitish, with a broad fuscous line, and a second round apex.

Albany, West Australia; one specimen, in October.

606. (127d.) *Trach. delophanes*, n.sp.

♂. 19 mm. Head pale reddish-ochreous. Palpi whitish-ochreous, second joint with basal half and a subapical band, terminal joint with a subapical band dark fuscous. Antennæ fuscous. Thorax dark fuscous, posterior half whitish-ochreous. Abdomen light ochreous-grey. Legs dark fuscous, apex of joints and hairs of posterior tibiae whitish-ochreous. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; pale ochreous, fuscous-tinged, and with a few scattered dark fuscous scales; four suffused ill-defined rather dark fuscous fasciæ; first narrow, very near base, with a triangular projection outwards on fold; second at $\frac{1}{3}$, connected with first by a costal suffusion, becoming obsolete towards inner margin; third at $\frac{2}{3}$, moderately broad; fourth hindmarginal, broad on costa, attenuated to anal angle, with a projection inwards in middle; a blackish dot on second fascia in disc, a second beneath it on fold, and a third on third fascia in disc, first and third connected by a clear white fuscous-margined streak, interrupted in middle with dark fuscous; beyond third dot the posterior margin of third fascia is narrowly but deeply excavated, containing a few whitish scales: cilia fuscous-grey, mixed with whitish-ochreous. Hindwings fuscous-grey, becoming paler towards base; cilia grey-whitish, with two obscure light grey lines, base whitish-ochreous.

Geraldton, West Australia; one specimen, in November.

607. (127e.) *Trach. metrospila*, n.sp.

♂. 16 mm. Head, palpi, antennæ, and thorax dark bronzy-fuscous, apex of terminal joint of palpi white. Abdomen grey,

terminal half yellow-ochreous. Legs dark fuscous, apex of joints and hairs of posterior tibiæ whitish. Forewings elongate, posteriorly scarcely dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; rather dark fuscous, with bronzy reflections; three small white dots in a longitudinal series in disc towards middle, connected by two elongate black dots; a black dot, followed by a minute white dot, on fold before middle: cilia fuscous. Hindwings grey; cilia pale grey.

Albany, West Australia; in October, two specimens.

608. (127f.) *Trach. epiphaula*, n.sp.

♂♀. 13-15 mm. Head, palpi, and thorax whitish-fuscous, finely irrorated with blackish. Antennæ light fuscous. Abdomen pale grey. Legs grey, apex of joints and posterior tibiæ whitish. Forewings elongate, rather narrow, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; pale grey, finely irrorated with black; the black irroration tends to accumulate along the fold, where it is sometimes mixed with whitish, and on a discal streak; a black dot in disc at $\frac{2}{3}$, a second beneath it on fold, a third in disc at $\frac{2}{3}$, and a fourth, sometimes obsolete, on inner margin before anal angle: cilia grey-whitish irrorated with blackish. Hindwings pale grey; cilia grey-whitish.

York, West Australia; in October, seven specimens. A very obscure-looking insect.

609. (127g.) *Trach. coenodes*, n.sp.

♂. 15-18 mm. Head, palpi, antennæ, and thorax pale ochreous irrorated with dark fuscous. Abdomen whitish-ochreous. Legs dark fuscous, apex of joints and posterior pair pale whitish-ochreous. Forewings elongate, narrow, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; pale ochreous, irrorated with fuscous; a minute dark fuscous dot in disc at $\frac{2}{3}$, and a second, larger and more distinct, in disc at $\frac{2}{3}$: cilia

pale ochreous irrorated with fuscous. Hindwings fuscous-whitish, marginal edge fuscous; cilia pale whitish-ochreous, slightly fuscous-tinged.

Carnarvon, West Australia; in October, two specimens.

LOCHEUTIS, Meyr.

610. (131a.) *Loch. periscia*, n.sp.

♂♀. 11-13 mm. Head and thorax dark fuscous, with prismatic reflections, and with a few ochreous-white scales. Palpi ochreous-whitish, anterior edge dark fuscous. Antennæ grey. Abdomen rather dark fuscous. Legs dark fuscous, apex of joints whitish, hairs of posterior tibiæ grey-whitish. Forewings elongate, narrow, costa hardly arched, faintly sinuate, apex round-pointed, hind-margin very oblique, slightly rounded; dark fuscous, irregularly irrorated with white; the absence of this irroration produces two small roundish transversely placed and sub-confluent darker spots in disc at $\frac{2}{3}$, and another at $\frac{2}{3}$; a small clear whitish-ochreous spot on inner margin near base; a straight transverse clear white line at $\frac{4}{5}$, hardly reaching costa: cilia light fuscous, with a dark fuscous line, beneath apex becoming paler or whitish towards tips. Hindwings dark fuscous: cilia fuscous-grey, with a cloudy dark fuscous line.

Launceston and Campbelltown, Tasmania; in December, three specimens.

IOPTERA, Meyr.

611. (132a.) *Iopt. demica*, n.sp.

♂♀. 22-25 mm. Head, antennæ, and thorax white or ochreous-whitish, antennal ciliations of ♂ 3. Palpi with scales of second joint expanded also above towards apex, terminal joint much shorter than second; white irrorated with ochreous. Abdomen ochreous-whitish. Anterior legs dark fuscous, middle legs fuscous, posterior legs ochreous-whitish. Forewings very elongate, narrow, costa slightly arched, faintly sinuate, apex round-pointed, hind-margin very oblique, slightly rounded; white, somewhat sprinkled

with whitish-ochreous, all veins lined with fuscous, sometimes with pale ochreous streaks between veins; some scattered black scales towards base and inner margin; a narrow fuscous suffusion along costa from $\frac{1}{4}$ to apex; an irregular greyish-ochreous suffusion along inner margin from base to anal angle, its upper margin partially marked with fuscous; a slender irregular fuscous streak near hindmargin from above anal angle to apex; two dark fuscous dots transversely placed in disc at $\frac{2}{3}$; in ♀ these are preceded by a suffused grey transverse band: cilia whitish-ochreous, somewhat mixed with white. Hindwings grey-whitish, more or less tinged with whitish-ochreous, especially towards apex; cilia ochreous-whitish.

Melbourne, Victoria; Mount Lofty, South Australia; in April, three specimens, received from Mr. E. Guest. Appears somewhat variable; but easily distinguished from *I. aristogona* (of which I have now a small series) by absence of blackish oval spot in disc beyond $\frac{2}{3}$, and by the much shorter antennal ciliations of ♂.

PHLOEOPOLA, Meyr.

612. (135a.) *Phloe. mesocentra*, n.sp.

♂. 23 mm. Head and thorax pale greyish-ochreous suffused with fuscous. (Palpi broken.) Antennæ fuscous. Abdomen ochreous irrorated with fuscous. Legs dark fuscous, ringed with whitish-ochreous, hairs of posterior tibiæ whitish-ochreous. Forewings elongate, posteriorly dilated, costa moderately arched, faintly sinuate in middle, apex rounded, hindmargin obliquely rounded; pale greyish-ochreous, fuscous-tinged, and irrorated with dark fuscous; markings dark fuscous; a small spot on base of costa, nearly confluent with another on base of inner margin; a small spot beneath costa near base; a round dot in disc at $\frac{1}{3}$, a second slightly before middle, and a third before $\frac{2}{3}$, placed in a longitudinal series and connected by a distinct pale streak; a fourth on fold beneath or slightly before first; a thick cloudy streak from costa at $\frac{5}{6}$, sharply indented above middle, thence rapidly

attenuated and curved near hindmargin to before anal angle; veins posteriorly lined with dark fuscous: cilia pale greyish-ochreous, towards base suffused with fuscous, appearing to form two darker lines. Hindwings ochreous-grey-whitish, posteriorly suffused with fuscous-grey; an obscure grey discal dot; cilia fuscous-whitish.

Mount Kosciusko (5000 feet), New South Wales, in January; one specimen. A special characteristic, only shared by the New Zealand *P. dinocosma*, is the distinct discal dot of hindwings. A specimen from Melbourne, received from Dr. Lucas, is very probably the same species, agreeing well in general characters, but having the costa of forewings distinctly spotted with dark fuscous at $\frac{1}{3}$ and beyond middle.

613. (135b.) *Phloe. hyperarcha*, n.sp.

♂. 31-38 mm. Head, palpi, and thorax pale ochreous irrorated with fuscous. Antennæ fuscous. Abdomen pale greyish-ochreous. Legs dark fuscous, irrorated and ringed with whitish-ochreous (posterior pair broken). Forewings elongate, posteriorly dilated, costa rather strongly arched, apex rounded, hindmargin nearly straight, little oblique, rounded beneath; pale ochreous, thinly sprinkled with fuscous, more strongly towards base and anterior half of costa; a dark fuscous dot in disc at $\frac{1}{3}$, a small dark fuscous spot in disc before $\frac{2}{3}$, and a short longitudinal dark fuscous linear streak lying between these, the three connected by an obscure pale streak; a short longitudinal dark fuscous linear streak on fold rather obliquely before first discal dot; a series of small cloudy dark fuscous spots from $\frac{3}{4}$ of costa, continued in a strong curve near costa and hindmargin to inner margin at $\frac{3}{4}$, slightly indented above lower extremity: cilia pale ochreous, somewhat sprinkled with fuscous. Hindwings fuscous-grey, becoming fuscous-whitish towards base and costa anteriorly; cilia fuscous-whitish.

Warragul and Melbourne, Victoria; four specimens, taken by Dr. Lucas, to whom I am indebted for a type. A distinct species, conspicuous by its unusually large size.

614. (139a.) *Phloe. zygophora*, n.sp.

♂♀. 14-17 mm. Head, palpi, and thorax rather dark fuscous, finely sprinkled with whitish-ochreous. Antennæ fuscous. Abdomen fuscous-grey. Legs dark fuscous, obscurely ringed with ochreous-whitish. Forewings elongate, posteriorly somewhat dilated, costa moderately arched, apex rounded, hindmargin obliquely rounded; light fuscous, with a few scattered dark fuscous and whitish-ochreous scales; sometimes a dark fuscous suffused mark from costa near base, often obsolete; three dark fuscous fasciæ perpendicular to costa, first about $\frac{1}{3}$, narrow, not reaching inner margin, second beyond middle, moderately broad, narrowed in disc, third at $\frac{4}{5}$, broad on costa, attenuated to anal angle, projecting rather acutely inwards in disc and with slight corresponding indentation on posterior margin; a blackish dot in disc and a second on fold on first fascia, and a larger one in disc on second fascia; a slight whitish-ochreous suffusion on costa before second fascia, a conspicuous suffused whitish-ochreous spot on costa between second and third fasciæ, and a suffused whitish-ochreous apical spot; a hindmarginal row of dark fuscous dots: cilia light fuscous, sprinkled with whitish-ochreous, base spotted with dark fuscous. Hindwings fuscous-grey; cilia pale fuscous.

Bathurst (3000 feet), New South Wales; common in a restricted locality in November, flying in the sunshine at 7 a.m. Easily recognised by the distinct fasciæ and whitish-ochreous costal spots.

615. (143a.) *Phloe. centropis*, n.sp.

♂. 14-16 mm. Head whitish-grey. Palpi dark fuscous irrorated with whitish. Antennæ whitish, annulated with dark fuscous. Thorax whitish-grey, with an oblique black streak, suffused with ochreous-brown, from each shoulder towards middle of back. Abdomen whitish-ochreous. Legs dark fuscous, ringed with whitish-ochreous, hairs of posterior tibiæ whitish-ochreous. Forewings elongate, hardly dilated, costa moderately arched, apex

rounded, hindmargin obliquely rounded; light grey, irrorated with whitish, more or less suffused in disc with pale ferruginous, and with a few scattered black scales; a black dot on base of costa; a slender black transverse streak near base, hardly reaching costa; a dark fuscous dot on costa at $\frac{1}{3}$; a moderately large subtriangular fuscous spot, mixed with black, on inner margin before middle, its apex shortly produced upwards; a pale dot, finely black-margined, in disc at $\frac{2}{3}$, a second in middle, and a third similar, but larger and more transverse, at $\frac{2}{3}$; a blackish-fuscous line from costa beyond middle very obliquely outwards to near apex, there sharply angulated, beneath angulation sharply indented inwards, and continued in a strong curve near hindmargin to inner margin before anal angle, shortly indented above lower extremity; a pale ferruginous streak along hindmargin: cilia pale fuscous irrorated with whitish, basal half on costa spotted with dark fuscous. Hindwings pale grey, more whitish-grey towards base; cilia whitish-ochreous. greyish-tinged.

Sydney, New South Wales; in October, three specimens. Elegant and distinct.

616. (143b.) *Phloe. micropis*, n.sp.

♂♀. 19-25 mm. Head and thorax light fuscous mixed with whitish-ochreous and dark fuscous, thorax with a dark fuscous oblique streak from each shoulder meeting on back. Palpi dark fuscous mixed with pale whitish-ochreous. Antennæ whitish-ochreous annulated with fuscous. Abdomen light fuscous. Legs dark fuscous, ringed with whitish-ochreous, hairs of posterior tibiae pale whitish-ochreous. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; rather light fuscous, densely mixed with ochreous-whitish; the absence of ochreous-whitish scales produces four very ill-defined and irregular darker fasciæ, on which the veins are suffused with dark fuscous, first subbasal, second about $\frac{1}{3}$, third beyond middle, very irregularly curved and indented, fourth from $\frac{2}{3}$ of costa, running into third above anal angle, extremities

much attenuated, posterior edge near and parallel to hindmargin, anterior edge rather projecting above middle; a dark fuscous longitudinal streak in disc from $\frac{1}{3}$ to $\frac{2}{3}$, interrupted by two sub-elongate well-defined ochreous-whitish dots, and a similar streak beneath it on fold also interrupted by two ochreous-whitish dots, the second less defined and sometimes prolonged: cilia ochreous-whitish or fuscous-whitish, basal half light fuscous obscurely spotted with darker. Hindwings pale fuscous-grey, paler and more tinged with whitish-ochreous towards base; cilia ochreous-whitish, with broad subbasal and slender posterior fuscous lines.

Mount Kosciuszko (2700-5000 feet), New South Wales; rather common in January. Characterised by the clear ochreous-whitish discal dots, and strong ochreous-whitish irroration between indistinct fasciæ.

617. (145a.) *Phloe. pyrgonota*, n.sp.

♂. 23-25 mm. Head and thorax brownish-ochreous. Palpi whitish-ochreous irrorated with dark fuscous, basal third of second joint dark fuscous, antennæ fuscous. Abdomen light fuscous. Legs dark fuscous, ringed with whitish-ochreous, hairs of posterior tibiæ whitish-ochreous. Forewings elongate, moderate, costa moderately arched, apex rounded, hindmargin rather obliquely rounded; flesh-colour, slightly fuscous-tinged, sprinkled with blackish; costa brownish-ochreous, more densely irrorated with blackish; a narrow pale ochreous basal fascia, rather produced along inner margin; immediately beyond this a large dark fuscous triangular patch on inner margin, darkest anteriorly, bounded by an irregular line from costa near base to $\frac{2}{3}$ of inner margin, with an irregular projection upwards below middle, margined with some whitish scales; a blackish partially whitish-margined dot in disc at $\frac{2}{4}$; a small blackish spot in disc at $\frac{3}{5}$, preceded by some whitish scales; a blackish dot obliquely before and beneath this; a large rather dark fuscous suboval blotch from costa at $\frac{2}{3}$, reaching more than half across wing, anteriorly touching discal spot, posteriorly margined by an ill-defined line of whitish scales followed by some black scales, indented beneath

costa, becoming obsolete towards inner margin: cilia pale ochreous, with a fuscous line, basal half suffusedly barred with fuscous. Hindwings rather dark grey, basal hairs pale whitish-ochreous; cilia light fuscous, somewhat mixed with pale whitish-ochreous.

Sydney, New South Wales; Melbourne, Victoria; in October and November, three specimens, attracted by light. Conspicuously distinct by flesh-coloured ground, and large dark blotches.

HIEROPOLA, Meyr.

In the following closely-related species the terminal joint of the palpi is found to vary in length with species and sexes, and I am therefore now of opinion that this cannot be maintained as a distinct genus, but must be merged in *Hoplitica*. The four species may be placed together at the end of that genus, and may be recognised from the rest of the species by the yellow and purple colouring; they may be separated from one another as follows:—

1. Cilia of hindwings wholly grey..... 2.
Cilia of hindwings not wholly grey..... 3.
2. Hindwings wholly grey..... 620. *thyteria*.
Hindwings towards costa ochreous-yellowish..... 619. *hemigenes*.
3. Hindwings with apex grey..... 618. *callianthes*.
Hindwings wholly pale ochreous-yellowish..... 150. *jucundella*.

618. (150a.) *Hopl. callianthes*, n.sp.

♂♀. 11-13 mm. Head pale yellow. Palpi pale yellow, terminal joint with a dark fuscous median band. Antennæ pale yellow annulated with dark fuscous. Thorax purplish-fuscous, with a yellow spot on shoulder. Abdomen yellowish. Legs yellowish, ringed with fuscous, anterior tibiae fuscous. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin very obliquely rounded; clear yellow; markings fuscous-purple, irregularly margined with dark fuscous; a basal fascia, broadest on

costa; a moderate fascia from $\frac{2}{3}$ of costa to middle of inner margin, angulated outwards above middle; a second from beyond middle of costa to $\frac{2}{3}$ of inner margin, confluent with first on angulation, where it includes a yellow dot; a third from apex of second to anal angle, rather irregular-edged; a fourth along hindmargin, attenuated beneath and just reaching third: cilia ochreous-yellow, on anal angle grey. Hindwings pale ochreous-yellowish, towards apex more or less grey; cilia ochreous-yellowish, round apex greyish, tips sometimes wholly grey.

Sydney, New South Wales; Fernshaw, Victoria; from September to December, four specimens.

619. (150b.) *Hopl. hemigenes*, n.sp.

♂. 13 mm. Head ochreous-yellow. Palpi pale ochreous-yellow, terminal joint with a dark fuscous median band. Antennæ pale yellowish, annulated with dark fuscous. Thorax purplish-grey, with yellow spot on shoulder. Abdomen grey. Legs grey, ringed with yellow-whitish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin very obliquely rounded; light yellow, slightly ochreous-tinged; markings rather dark purplish-grey or greyish-purple, margined with blackish-grey; an elongate spot along base of inner margin, posteriorly connected with first fascia in disc; a moderate rather irregular-edged fascia from $\frac{1}{3}$ of costa to middle of inner margin; a second from before middle of costa to middle of inner margin, where it is confluent with first, angulated outwards in middle; a third from $\frac{2}{3}$ of costa to anal angle, more or less broadly connected with second on angulation; a fourth along hindmargin, confluent with third beneath: cilia ochreous-yellow, above apex and on anal angle rather dark grey. Hindwings grey, towards costa and apex more or less broadly suffused with light ochreous-yellowish; cilia grey.

Albany, West Australia; in December, two specimens.

620. (150c.) *Hopl. thyteria*, n.sp.

♀. 14 mm. Head and palpi ochreous-whitish, terminal joint sometimes blackish towards middle. Antennæ whitish, annulated

with fuscous. Thorax light yellowish (partly defaced). Abdomen grey-whitish, greyer posteriorly, Legs grey, ringed with whitish. Forewings elongate, costa moderately arched, apex tolerably pointed, hindmargin extremely obliquely rounded; light crimson-purple, irrorated with fuscous; markings pale yellow, margined with dark fuscous; four tolerably parallel oblique irregular fasciæ; first interrupted below middle; second not reaching inner margin; third containing a small spot of groundcolour in disc, rather widely furcate towards inner margin; fourth broader, less oblique, not quite reaching anal angle; a narrow streak along upper $\frac{2}{3}$ of hindmargin: cilia light yellow, above apex and on anal angle light grey. Hindwings and cilia grey.

Victoria; two specimens (Coll. Lucas).

PILOPREPES, Meyr.

The following is a tabulation of the four described species (*iriodes* having been transferred to *Lepidotarsa* as noted above).

- | | |
|--|-----------------------------|
| 1. Hindwings yellow..... | 621. <i>anassa</i> . |
| Hindwings grey..... | 2. |
| 2. Forewings with ochreous-orange markings 152. <i>aemulella</i> . | |
| Forewings without ochreous-orange markings..... | 3. |
| 3. Forewings with broad brown median fascia 623. <i>antidoxa</i> . | |
| Forewings without broad brown median fascia..... | 622. <i>aristocratica</i> . |

621. (151a.) *Pil. anassa*, n.sp.

♂. 25 mm. Head yellowish-white. Palpi white, basal $\frac{2}{3}$ of second joint dark grey. Antennæ grey. Thorax fuscous, becoming ochreous towards shoulders, with a few blue-whitish scales before middle, and a forwards-angulated transverse blue-whitish line behind middle. Abdomen ochreous-yellow. Anterior legs whitish; middle and posterior pair ochreous-yellow, tarsal joints infuscated towards base. Forewings elongate, moderate, costa rather strongly

arched, apex rounded, hindmargin obliquely rounded; yellowish-white; a fuscous basal patch, with blue-grey reflections, not reaching costa, extending on inner margin to $\frac{1}{3}$, outer edge nearly straight, cut by a slender whitish line on fold; a very broad nearly straight fuscous-grey fascia, with blue-grey reflections, from costa before middle to inner margin beyond middle, its anterior half on upper $\frac{3}{4}$ bright yellow-ochreous suffused anteriorly into groundcolour and posteriorly into colour of fascia; a very fine denticulate silvery-white line, crossing fascia obliquely from middle of its costal end to above middle of posterior side; an apical patch, nearly straight-edged anteriorly, extending along hindmargin to near anal angle, glossy grey beneath, changing gradually upwards into yellow-ochreous; thence suffused into groundcolour, its hindmarginal edge bluish-grey: cilia dark grey, on costa changing into pale ochreous, on anal angle whitish. Hindwings rather deep ochreous-yellow, apex and upper half of hindmargin narrowly suffused with dark fuscous; cilia ochreous-yellow, on upper half of hindmargin dark fuscous.

Bathurst (2500 feet), New South Wales; one specimen in November; I have seen a second, probably from Victoria. It is one of the finest of the *Oecophoridae*; yet there can be no doubt that it is coloured in elaborate and faithful imitation of the drop-pings of a bird; the alternating effects of white shading through yellow into brown, the glistening film of the darker portions, and other details are strictly reproduced.

622. (152a.) *Pil. aristocratica*, n.sp.

♂♀. 15-19 mm. Head white, crown suffused with fuscous towards centre. Palpi white, a slender sub-apical ring of second joint, and anterior edge of terminal joint dark fuscous. Antennæ grey. Thorax white, back dark fuscous except posteriorly. Abdomen whitish-ochreous. Anterior legs white spotted with dark fuscous, middle and posterior pair ochreous-whitish. Forewings elongate, moderate, costa moderately arched, rather dilated with scales before middle, apex rounded, hindmargin obliquely

rounded ; white, towards middle of inner margin faintly ochreous-tinged ; a pale grey ochreous-tinged line from $\frac{1}{3}$ of costa to before middle of inner margin, slightly curved outwards, shortly indented on fold ; two irregular sub-dentate light grey cloudy streaks from inner margin between this and base, reaching about half across wing ; a rectangular transverse pale greyish-ochreous blotch, irrorated with grey or fuscous, extending from anal angle $\frac{2}{3}$ across wing, its upper anterior angle connected with middle of costa by an oblique greyish-ochreous line ; in this blotch near anterior edge, in middle of wing, is a small crescentic dark fuscous spot, convex towards apex of wing, followed by a few whitish scales ; a narrow ochreous-grey streak round apex ; a dark fuscous hindmarginal line, interrupted by teeth of a very fine denticulate white line preceding it : cilia whitish, basal half round apex fuscous, bounded by a blackish-fuscous line which is paler and interrupted on lower half, tips greyish on lower half of hindmargin. Hindwings rather dark grey ; cilia pale whitish-ochreous, basal half suffused with fuscous-grey.

Brisbane, Queensland ; Sydney, New South Wales ; from September to December, and in February, six specimens. This also is doubtless imitative of bird's-droppings.

623. (152b.) *Pil. antidoxa*, n.sp.

♂. 19 mm. Forewings elongate, moderate, costa rather strongly arched, apex obtuse, hindmargin rather oblique, slightly rounded ; white, ochreous-tinged except on margins ; two cloudy grey irregular transverse lines near base ; a broad brown fascia from before middle of costa to beyond middle of inner margin, where it is broadest, posteriorly margined with dark fuscous, mixed with grey in disc, and containing four discal tufts of scales arranged in a square, and partially surrounded and mixed with blackish scales ; a short pale grey transverse mark before apex, not touching margins ; hindmargin and apical third of costa spotted with light grey ; cilia white, towards apex whitish-ochreous, terminal half on lower $\frac{2}{3}$ of hindmargin dark grey. Hindwings fuscous-grey ; cilia light ochreous-grey.

Adelaide, South Australia ; one specimen in January. The description is incomplete, for the specimen (with others) was badly damaged by the carelessness of custom-house officials ; but the generic location had been previously ascertained, and as it is very distinct specifically (recalling some European species of *Penthina*), the particulars given should be sufficient to ensure its recognition.

31.* PYRGOPTILA, n.g.

Head smooth, sidetufts loosely spreading ; tongue developed. Antennæ in ♂ — (?), basal joint moderately elongate, with pecten. Labial palpi long, recurved, second joint thickened with appressed scales, terminal joint nearly as long as second, slender, acute. Thorax with strong double crest. Posterior tibix clothed with long dense hairs. Forewings with tufts of raised scales on surface ; vein 1 furcate, 2 from near angle, 7 and 8 stalked, 7 to hindmargin. Hindwings elongate-ovate, cilia $\frac{2}{3}$; veins 3 and 4 from a point, 6 and 7 parallel.

Apparently most allied to *Trachypepla*, yet the termination of vein 7 is hindmarginal.

624. (152c.) *Pyrg. serpentina*, n.sp.

♀. 17 mm. Head and thorax ochreous-brownish, mixed with blackish. Palpi ochreous-whitish, sprinkled with blackish. Antennæ fuscous ringed with whitish. Abdomen grey. Legs dark fuscous, ringed with whitish-ochreous, posterior tibix whitish-ochreous. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin obliquely rounded ; light ochreous-brownish, with some scattered black scales, deeper ochreous-brown on basal third and on a posterior discal patch ; a short black mark from costa near base ; a black dot near beyond apex of this ; a cloudy dark fuscous dot on costa at $\frac{1}{4}$; a tuft of scales in disc at $\frac{2}{5}$, and a second beneath fold rather obliquely before it, connected by a black line, more or less surrounded with whitish scales ; a dark fuscous narrow transverse spot from costa beyond middle, triangularly dilated on costa,

reaching half across wing, lower extremity more blackish; a quadrate blackish dot, partially whitish-margined, beneath and before lower anterior angle of this; a fine white line, anteriorly margined with dark fuscous, from costa near apex to inner margin before anal angle, sharply indented beneath costa, thence moderately curved, dark margin dilated on costa into a triangular spot: cilia ochreous-brownish, extreme tips whitish, basal half barred with a suffused blackish irroration. Hindwings grey; cilia light grey, with a darker basal line.

32.** TALANTIS, n.g.

Head smooth, sidetufts loosely spreading; tongue developed. Antennæ in ♂ with long fine ciliations (4), basal joint moderately elongate, with pecten. Labial palpi long, recurved, second joint with appressed scales, rather rough beneath towards apex, terminal joint shorter than second, moderate, acute. Thorax with small rounded posterior crest. Posterior tibiæ clothed with long dense hairs above. Forewings with vein 1 furcate, 2 from near angle of cell, 7 and 8 stalked, 7 to apex. Hindwings elongate-ovate, cilia $\frac{3}{4}$; veins 3 and 4 from a point, 6 and 7 parallel.

Apparently allied to *Mesolecta* and *Oenochroa* on the one hand, and *Nephogenes* on the other, but differing from all these by the long antennal ciliations. The thoracic crest is little conspicuous, and unless the specimen is in fine condition, may be very readily passed over.

625. (163a.) *Tal. chimerina*, n.sp.

♂♀. 21-25 mm. Head, palpi, antennæ, and thorax fuscous. Abdomen pale grey, anal tuft whitish-ochreous. Legs fuscous, apex of joints ochreous-whitish, hairs of posterior tibiæ ochreous-whitish. Forewings elongate, posteriorly slightly dilated, costa moderately arched, apex roundpointed, hindmargin obliquely rounded; fuscous, slightly ochreous-tinged, finely irrorated with dark fuscous; a small dark fuscous dot in disc at $\frac{1}{3}$, a second rather obliquely beyond it on fold, a third beneath middle of costa,

a fourth in disc at $\frac{2}{3}$, and a fifth beneath fourth, all sometimes quite obsolete in ♀; a very indistinct dark fuscous line from $\frac{2}{3}$ of costa to inner margin before anal angle, moderately curved outwards, sharply indented beneath costa, forming a small cloudy dark spot above anal angle, in ♀ generally obsolete; a series of small obscure dark fuscous dots along hindmargin: cilia grey irrorated with ochreous-whitish. Hindwings, pale whitish-grey; cilia grey-whitish, with a faint grey line.

Sydney, New South Wales, from May to September, therefore purely a winter species; rather common.

MESOLECTA, Meyr.

626. (163b.) *Mes. xanthastis*, n.sp.

♂♀. 18-21 mm. Head orange. Palpi orange, apex of terminal joint dark fuscous, in ♂ second joint suffused with dark grey towards basal half. Antennæ dark grey. Thorax orange, with an oblique blackish streak from each shoulder meeting in middle. Abdomen dark grey, anal tuft yellowish. Legs dark grey, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex roundpointed, hindmargin obliquely rounded; orange; markings black; a streak from base beneath costa to costa at $\frac{2}{3}$, posteriorly suffused and sometimes becoming nearly obsolete; a round dot in disc at $\frac{2}{3}$, and a second beneath it on fold; a trifurcate mark in disc at $\frac{2}{3}$; a line from $\frac{1}{3}$ of costa to before anal angle, slightly curved outwards, somewhat indented beneath costa; a more or less marked suffusion towards apex: cilia grey, darkest at anal angle, suffused with yellow towards base round apex. Hindwings dark grey; cilia grey, base yellowish-tinged.

Albany, West Australia; in September and December, four specimens.

627. (163c.) *Mes. callistis*, n.sp.

♂♀. 16-18 mm. Head orange, centre of crown dark fuscous. Palpi dark grey, second joint more or less pale yellowish at apex.

Antennæ dark fuscous. Thorax dark fuscous, posterior margin yellowish. Abdomen dark grey, anal tuft yellowish. Legs dark grey, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; ochreous-yellow; markings dark grey; a small basal patch; a small cloudy spot on inner margin at $\frac{1}{4}$; a rather narrow irregular fascia from $\frac{1}{4}$ of costa to middle of inner margin, connected with basal patch by a bar above middle, and dilated into an elongate spot on inner margin; on posterior margin of this are sometimes two projections in disc, representing normal dots, but these are often absorbed in fascia; a moderately large semi-oval spot on costa beyond middle, connected by a narrow fascia with anal angle, with a short oblique projection inwards from below middle; a dot close before lower anterior part of costal spot; a streak from costa near apex to middle of posterior fascia, emitting from its middle a curved line to anal angle; a small spot on hindmargin beneath apex: cilia grey irrorated with whitish-yellowish; basal third yellow indistinctly spotted with dark grey. Hindwings dark grey; cilia light ochreous-yellowish.

Albany, West Australia; eight specimens, in September and October.

NEPHOGENES, Meyr.

628. (167a.) *Neph. brachyomis*, n.sp.

♂. 17 mm. Head ochreous-whitish. Palpi dark fuscous, terminal joint and apex of second whitish. Antennæ dark fuscous. Thorax fuscous-whitish, patagia fuscous. Abdomen ochreous-grey-whitish, anal tuft whitish-ochreous. Legs rather dark fuscous, posterior pair ochreous-whitish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin very obliquely rounded; light grey, slightly brownish-tinged, posteriorly irrorated with rather dark fuscous; a moderate dark fuscous basal fascia, well-defined, its outer edge straight; a minute black dot in disc at $\frac{1}{3}$, a second beneath it on fold, a third above middle of disc, and two others transversely placed in

disc at $\frac{3}{8}$; a faint darker curved line from $\frac{1}{4}$ of costa to anal angle, indented beneath costa, but hardly traceable: cilia grey-whitish, basal half obscurely barred with grey on upper half of hindmargin. Hindwings pale whitish-grey; cilia ochreous-grey-whitish, with a faint darker line.

Mount Victoria (3,300 feet), New South Wales; two specimens, in November. Near *N. orescoa*, but wholly without dark costal patch.

629. (169a.) *Neph. axiota*, n.sp.

♂. 20-23 mm. Head, antennæ, and thorax dark grey, apex of patagia grey-whitish. Palpi dark grey, posterior edge whitish. Abdomen grey, anal tuft whitish-ochreous. Legs dark grey, posterior pair pale whitish-ochreous. Forewings elongate, costa gently arched, faintly sinuate in middle, apex round-pointed, hindmargin nearly straight, oblique; fuscous-grey, with a few grey-whitish scales in disc and posteriorly; a dark fuscous-grey suffused spot on base of costa, reaching half across wing; an elongate narrow semi-oval dark fuscous-grey patch extending along costa from near beyond this to $\frac{2}{3}$, surrounded beneath posterior half by a moderately broad white suffusion; an irregular blackish-fuscous mark on lower margin of this patch in disc, representing two discal dots; a blackish-fuscous dot on fold at $\frac{2}{5}$, and another near beyond and above it; a crescentic blackish-fuscous mark in disc at $\frac{2}{3}$; an indistinct dark fuscous line from $\frac{3}{4}$ of costa to inner margin before anal angle, angulated in middle, lower half curved near hindmargin: cilia grey, somewhat mixed with grey-whitish. Hindwings grey, fuscous-tinged; cilia whitish-fuscous.

Warragul, Victoria; two specimens taken by the Rev. G. H. Raynor in December. Closely allied to *N. protorthra*, with which it is almost identical in markings of the forewings, but immediately distinguished by the grey hindwings.

630. (171a.) *Neph. pyrota*, n.sp.

♂♀. 14-17 mm. Head, palpi, and thorax dark ochreous-fuscous, base of palpi whitish. Antennæ dark fuscous. Abdomen dark

fuscous, segmental margins yellowish. Legs dark fuscous, posterior pair yellowish. Forewings very elongate, rather narrow, costa hardly arched, apex round-pointed, hindmargin very obliquely rounded; dark ochreous-fuscous, more or less sprinkled with whitish and pale yellow-ochreous scales, especially on posterior $\frac{2}{3}$; sometimes a darker fuscous dot on fold before middle, another in disc at $\frac{2}{3}$, and a curved line, indented beneath costa, from $\frac{5}{8}$ of costa to anal angle, but these are often quite obsolete: cilia rather dark ochreous-fuscous, sprinkled with whitish. Hindwings orange, apical half dark fuscous; inner margin narrowly dark fuscous; in ♀ disc sprinkled with dark fuscous; cilia rather dark fuscous, becoming whitish-yellowish towards anal angle.

York, West Australia; locally common in October, in a dry grassy place. Exceptionally distinct by the orange hindwings.

631. (174a.) *Neph. atmopis*, n.sp.

♂. 24 mm. Head, palpi, antennæ, thorax, and legs whitish; palpi and shoulders sprinkled with dark fuscous; anterior legs fuscous. Abdomen whitish-ochreous. Forewings elongate, rather narrow, costa gently arched, apex obtuse, hindmargin very obliquely rounded; whitish, irrorated with fuscous narrowly along costa, broadly towards inner margin and posteriorly; a dark fuscous dot in disc at $\frac{1}{3}$, a second rather obliquely beyond it on fold, a third above middle of disc, two others transversely placed and sub-confluent in disc at $\frac{2}{3}$, and two less defined between lower of them and second; a curved fuscous line from $\frac{5}{8}$ of costa to anal angle, indented beneath costa: cilia whitish, sprinkled with fuscous. Hindwings grey; cilia whitish-fuscous, more whitish towards anal angle, with a cloudy grey line.

Toowoomba, Queensland; one specimen in December. Allied to *N. apora*, but differs by less straight costa, and absence of grey costal suffused patch, as well as other minor points.

PHILOBOTA, Meyr.

I now refer to this genus *P. theorica* and *P. thermochroa*, formerly included in *Peltophora* in the absence of the ♂; this

sex is indeed still unknown, but I have since obtained true species of *Philobota* so nearly allied to them specifically, that I have little doubt of the justice of the change. I also propose to include here *P. sigmophora* and *P. subpunctella*, previously placed in *Eriodyta*, which genus I break up, as will be explained later. A tabulation of the whole genus is added at the end of the species.

632. (176a.) *Phil. chiastis*, n.sp.

♂♀. 19-23 mm. Head orange. Palpi ochreous-yellow, anterior edge of terminal joint dark fuscous. Antennæ dark fuscous. Thorax ochreous-yellow, anterior margin dark purple-fuscous. Abdomen ochreous-yellow. Legs dark fuscous, middle tibiæ and posterior pair ochreous-yellow. Forewings elongate, posteriorly slightly dilated, costa slightly arched, apex round-pointed, hindmargin nearly straight, oblique; yellow; markings dark purple fuscous; a narrow straight fascia near base; a narrow streak along costa from base to $\frac{3}{4}$; a slender somewhat outwards-curved fascia from apex of this to $\frac{3}{4}$ of inner margin, and a similar inwards-curved fascia from before $\frac{3}{4}$ of costa to anal angle, more or less confluent in middle and sometimes throughout; a minute dot in disc at $\frac{2}{3}$, and in ♀ sometimes a small triangular spot on inner margin about middle, connected on inner margin with posterior fascia, and sometimes with discal dot by a straight slender streak; a narrow fascia along hindmargin, attenuated to anal angle: cilia dark fuscous. Hindwings dark fuscous, apex sometimes ochreous-yellow; cilia light ochreous-yellow.

York, West Australia; in November, six specimens. Not near any other; the variation of marking is analogous to that in *Coes. triptycha*.

633. (184a.) *Phil. lithochlora*, n.sp.

♂. 19-23 mm. Head ochreous-whitish. Palpi grey, terminal joint and apex of second whitish. Antennæ grey. Thorax pale whitish-ochreous. Abdomen light grey, anal tuft pale greyish-ochreous. Legs grey. Forewings elongate, posteriorly slightly

dilated, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; pale whitish-ochreous (in less fresh specimens whitish): cilia pale whitish-ochreous. Hindwings grey; cilia pale greyish-ochreous.

Mount Kosciusko (4500-6000 feet), New South Wales; in January, common.

634. (188a.) *Phil. monoloncha*, n.sp.

♂♀. 21-25 mm. Head, palpi, and thorax in ♂ ochreous-yellow, in ♀ ochreous-whitish, shoulders with a dark fuscous spot; second joint of palpi except apex, and anterior edge of terminal joint dark grey. Antennæ grey. Abdomen pale yellowish-grey, anal tuft of ♂ ochreous-yellow. Legs dark grey, posterior tibiæ pale yellowish. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; in ♂ ochreous-yellow, in ♀ ochreous-whitish; a narrow dark fuscous streak along costa from base to $\frac{2}{3}$, apex pointed: cilia in ♂ ochreous-yellow, in ♀ ochreous-whitish. Hindwings grey; cilia in ♂ light ochreous-yellow, in ♀ pale whitish-ochreous.

Bathurst (2700 feet), New South Wales; in November, six specimens.

635. (190a.) *Phil. thiogramma*, n.sp.

♂. 28 mm. Head pale ochreous-yellowish. Palpi pale yellowish, second joint except apex, and anterior edge of terminal joint dark fuscous. Antennæ fuscous. Thorax whitish-ochreous, patagia fuscous. Abdomen pale ochreous-greyish, anal tuft ochreous-yellowish. Legs dark fuscous, posterior tibiæ pale yellowish. Forewings elongate, posteriorly rather dilated, costa gently arched, apex round-pointed, hindmargin rather strongly oblique, slightly rounded; rather light ochreous-brown; a rather narrow dark fuscous streak along costa from base to $\frac{3}{4}$, posteriorly pointed, margined beneath throughout by a narrower pale ochreous-yellowish streak: cilia light ochreous-brown. Hindwings light grey, brownish-tinged; cilia whitish-grey-ochreous.

Mount Lofty, South Australia; one specimen received from Mr. E. Guest.

636. (190b.) *Phil. argotoxa*, n.sp.

♂. 24-25 mm. Head, palpi, antennæ, thorax, abdomen, and legs rather dark fuscous; terminal joint of palpi whitish above; posterior tibiæ greyish-ochreous. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; rather dark fuscous, darker on costal half; a rather narrow ochreous-white sub-costal streak from base of costa to costa again at $\frac{4}{5}$, including a small dark fuscous dot on its upper margin in middle, and a second on its lower margin at $\frac{2}{3}$: cilia fuscous. Hindwings rather dark fuscous; cilia fuscous.

Mount Lofty, South Australia; three specimens received from Mr. E. Guest.

637. (191a.) *Phil. melanoxantha*, n.sp.

♂♀. 23-25 mm. Head orange. Palpi dark fuscous, terminal joint and apex of second ochreous-yellow. Antennæ dark grey. Thorax orange, with a dark fuscous longitudinal stripe on each side of back. Abdomen pale yellowish-grey, anal tuft ochreous-yellow. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; deep ochreous-yellow, in ♀ lighter and duller; a rather narrow dark fuscous streak, black-margined beneath, along costa from base to $\frac{3}{4}$, posteriorly pointed; a small dark fuscous spot on inner margin almost at base; a black dot in disc at $\frac{1}{3}$, a second beneath it on fold, a third above middle of disc, a fourth in disc at $\frac{2}{3}$, a fifth below fourth, and a sixth near before and beneath fifth (in ♀ these are smaller and partially obsolete); a short inwardly oblique dark fuscous streak from costa to $\frac{5}{6}$, sometimes emitting a curved line of more or less connected dark fuscous dots to before anal angle: cilia whitish-yellowish. Hindwings grey, veins posteriorly obscurely whitish-ochreous; cilia whitish-ochreous, base yellowish-tinged.

. Albany, West Australia; common in September and October.

638. (194a.) *Phil. lysizona*, n.sp.

♂♀. 22-28 mm. Head whitish-ochreous or ochreous-yellowish. Palpi grey, terminal joint and apex of second white. Antennæ dark grey. Thorax ochreous-white, with a dark fuscous longitudinal stripe on each side of back. Abdomen whitish-ochreous. Legs dark fuscous, posterior pair pale ochreous-whitish. Forewings elongate, posteriorly slightly dilated, costa gently arched, apex round-pointed, hindmargin nearly straight, very oblique; ochreous-white; markings dark fuscous; a streak along costa from base to $\frac{3}{4}$, posteriorly pointed, in ♂ continued anteriorly as a subbasal fascia to inner margin, not in ♀; a dot in disc at $\frac{1}{3}$, a second beneath it on fold, a third above middle of disc, and a curved transverse mark in disc at $\frac{2}{3}$; a short inwardly oblique streak from costa at $\frac{4}{5}$, emitting from its apex both a cloudy lighter rather inwards-curved streak and an outwards-curved series of more or less connected dots to anal angle, where they meet; a small grey suffusion beneath apex; a more or less distinct hindmarginal series of dots: cilia ochreous-whitish, with an indistinct grey line. Hindwings light grey; cilia pale whitish-ochreous.

Bathurst (2700 feet), New South Wales; in November, six specimens.

639. (194b.) *Phil. hircacis*, n.sp.

♂. 34 mm. Head, palpi, and thorax whitish irrorated with fuscous. Antennæ grey-whitish. (Abdomen broken.) Legs grey, posterior pair whitish. Forewings very elongate, posteriorly slightly dilated, costa gently arched, apex round-pointed, hindmargin very obliquely rounded: pale fuscous, densely strewn with whitish, except on a very ill-defined narrow elongate patch along costa from $\frac{1}{4}$ to $\frac{2}{3}$; spaces between veins partially and indistinctly streaked with darker; a small subelongate dark fuscous dot in disc at $\frac{1}{3}$, a second beneath it on fold, a third in disc at $\frac{2}{3}$, a fourth beneath third, a fifth near before and beneath fourth; a very obscure darker curved line interrupted by veins, from $\frac{5}{8}$ of costa to

anal angle, rather indented beneath costa : cilia grey-whitish, basal half sprinkled with fuscous. Hindwings light brownish-grey ; cilia whitish, basal half very pale brownish.

Duaringa, Queensland ; one specimen sent by Mr. G. Barnard.

640. (195a.) *Phil. olympias*, n.sp.

♂. 21-25 mm. Head pale whitish-ochreous. Palpi, antennæ, thorax, abdomen, and legs rather dark grey, hairs of posterior tibiæ pale grey. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex round-pointed, hindmargin very obliquely rounded ; fuscous-grey ; a rather broad slightly darker streak along costa from base to $\frac{3}{5}$, posteriorly pointed, its lower edge darker fuscous towards middle, margined beneath from $\frac{1}{4}$ to extremity by a rather irregular suffused white streak, narrow in front but broader posteriorly ; an indistinct subcrescentic darker dot in disc at $\frac{3}{5}$: cilia fuscous. Hindwings fuscous-grey ; cilia pale fuscous.

Mount Kosciusko (5000-6000 feet), New South Wales ; in January, five specimens.

641. (198a.) *Phil. auxolyca*, n.sp.

♀. 26 mm. Head ochreous-whitish. Palpi grey, apex of second joint whitish. Antennæ grey. Thorax grey, posteriorly whitish, anteriorly dark fuscous. Abdomen grey, segmental margins whitish. Legs dark grey, hairs of posterior tibiæ ochreous-whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded ; pale fuscous almost wholly suffused with ochreous-whitish, appearing ochreous-grey-whitish ; markings black ; a small spot on base of inner margin, with some scattered black scales indicating an unexpressed sub-basal fascia ; a dot in disc at $\frac{1}{3}$, a second beneath it on fold, a third above middle of disc, a fourth in disc at $\frac{2}{3}$, a fifth beneath fourth, and indications of a sixth near before and beneath fifth ; a short thick inwardly oblique streak from costa at $\frac{4}{5}$, emitting a strongly outwards-curved series of subconfluent dots to inner margin before anal angle : cilia fuscous-whitish, base whitish

indistinctly spotted with pale grey. Hindwings very pale whitish-ochreous, hindmarginal edge fuscous-tinged; cilia ochreous whitish.

Mount Kosciusko (6000 feet), New South Wales; one specimen in January.

642. (198b.) *Phil. scieropa*, n.sp.

♂♀. 22-25 mm. Head, palpi, antennæ, thorax, abdomen, and legs rather dark fuscous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; fuscous; a darker subcrescentic dot or transverse mark in disc at $\frac{2}{3}$; sometimes also a darker dot in disc at $\frac{1}{3}$, a second on fold beneath it, and a third above middle of disc, especially in ♀, but these are generally obsolete: cilia fuscous. Hindwings rather dark fuscous; cilia light fuscous.

Mount Kosciusko (6500 feet), New South Wales; in January six specimens. This was one of the three species occurring highest on the mountain; it was rather common amongst some sheltered bushes on a small elevation not far from the summit.

643. (201a.) *Phil. marmorata*, n.sp.

♂. 18 mm. Head yellow-whitish. Palpi yellowish-white, second joint with lower half and a cloudy subapical ring dark fuscous. Antennæ fuscous. Thorax purplish-fuscous. Abdomen grey. Legs dark fuscous, posterior pair ochreous-whitish. Forewings elongate, costa moderately arched, apex obtuse, hindmargin obliquely rounded; yellow-whitish; markings rather dark purplish-fuscous, somewhat mixed with blackish; a thick streak along costa from base to $\frac{2}{3}$, posteriorly attenuated; a small triangular blotch on inner margin before middle, reaching nearly half across wing; a small irregular blotch on middle of costa, connected with dorsal blotch by a lighter cloud; on anterior edge of this cloud is a round blackish dot, and beyond it, posterior edge a crescentic blackish mark, its upper extremity touching costal blotch; a roundish blotch on anal angle, reaching more than half across

wing, posteriorly suffused, tending to be suffused above into both costal spots; a subquadrate spot on costa before apex, whence proceeds a curved series of small round spots very near hindmargin to anal angle; a hindmarginal row of dots: cilia fuscous, base yellow-whitish, on anal angle and on costa except opposite spot wholly yellow-whitish. Hindwings and cilia grey.

Queensland; one specimen (Coll. Lucas).

644. (201b.) *Phil. aeolias*, n.sp.

♂. 12-13 mm. Head pale ochreous-yellowish, more or less infuscated towards middle of crown. Palpi whitish-ochreous. Antennæ and thorax dark fuscous. Abdomen light fuscous. Legs dark fuscous, ringed with whitish-yellowish, hairs of posterior tibiæ pale ochreous-greyish. Forewings elongate, posteriorly slightly dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; fuscous, mixed with darker fuscous; a small indistinct suffused pale ochreous-yellowish spot on inner margin near base; a larger suffused pale ochreous-yellowish spot on inner margin beyond middle, another on costa before middle, and a third on costa at $\frac{3}{4}$; a dark fuscous dot in disc at $\frac{2}{5}$, a second beneath it on fold, and a third, larger, in disc at $\frac{3}{5}$: cilia fuscous, terminal half ochreous-whitish with a grey line. Hindwings grey; cilia whitish-ochreous-grey.

Deloraine, Tasmania; in November and December, locally very common.

645. (201c.) *Phil. eriscota*, n.sp.

♂♀. 16-18 mm. Head white. Palpi dark fuscous, terminal joint and apex of second white. Antennæ grey. Thorax dark fuscous, anterior margin ochreous-white towards middle. Abdomen grey, anal tuft ochreous-yellowish. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings elongate, costa moderately arched, apex obtuse, hindmargin obliquely rounded; dark ochreous-fuscous, base blackish-fuscous; markings ochreous-white, in ♀ clear white, margins slightly suffused; a moderate fascia near base,

broad in ♀; a narrower fascia from costa before middle to $\frac{3}{4}$ of inner margin, with an irregular oblique projection downwards from anterior edge below middle, in ♀ sometimes merged in a broader dilation; a rather inwardly oblique wedged-shaped streak from $\frac{3}{4}$ of costa, reaching half across wing; a narrow streak along hindmargin from apex to near anal angle: cilia dark fuscous, tips clear whitish-ochreous on upper half of hindmargin. Hindwings rather dark fuscous, bronzy-tinged; cilia fuscous, extreme base ochreous.

Glen Innes (3500 feet), New South Wales; in December, four specimens.

646. (202a.) *Phil. oriphaea*, n.sp.

♂. 19-21 mm. Head, palpi, and thorax rather dark fuscous, irrorated with ochreous-whitish. Antennæ whitish annulated with dark fuscous. Abdomen light grey, anal tuft whitish-grey-ochreous. Legs dark fuscous, apex of joints and posterior tibiae whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin slightly rounded, very oblique; fuscous-whitish or ochreous-whitish, densely irrorated with fuscous or dark fuscous, appearing fuscous; a more or less indicated very ill-defined suffused whitish-ochreous streak along inner margin from base to anal angle, indistinctly margined above with blackish from base to beyond middle, including a small rounded more distinctly whitish-ochreous projection upwards before middle; a blackish dot in disc at $\frac{1}{3}$, generally followed by a whitish-ochreous dot; a black dot, sometimes indistinctly circled with whitish-ochreous, in disc at $\frac{2}{3}$, beneath which is a whitish-ochreous dot; an indistinct slender dark fuscous line from $\frac{4}{5}$ of costa to inner margin before anal angle, thicker on costa, rather strongly curved outwards, sinuate inwards towards both extremities: cilia fuscous-whitish, somewhat sprinkled with fuscous and blackish, with two obscure darker lines. Hindwings grey; cilia pale whitish-fuscous, with an obscure darker line.

Mount Kosciusko (4600-5000 feet), New South Wales; in January, six specimens. A species of peculiar appearance and doubtful specific affinity.

647. (205a.) *Phil. melanoglypta*, n.sp.

♂. 23 mm. Head light ochreous-yellowish. Palpi grey, terminal joint and apex of second whitish. Antennæ grey. Thorax whitish, anterior margin dark fuscous, sides posteriorly ochreous-yellowish. Abdomen pale ochreous-yellowish. Legs dark fuscous, posterior tibiæ light yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; ochreous-white; markings dark fuscous; a very slender streak along costa from base to $\frac{2}{3}$; a rather narrow sometimes interrupted fascia near base; a narrow streak from disc at $\frac{1}{3}$ to costa at $\frac{2}{3}$, with short protuberances downwards at origin and in middle; a variable irregular patch towards middle of inner margin; a crescentic mark in disc at $\frac{2}{3}$; an outwards-curved line from costa at $\frac{1}{3}$ to inner margin before anal angle, sinuate beneath costa, emitting thence a narrow inwards-curved fascia which touches discal crescentic mark and rejoins it above inner margin; a moderate suffused apical spot: cilia whitish or grey. Hindwings light ochreous-yellow, apex slightly greyish-tinged; cilia pale ochreous-yellowish.

Bathurst (2700 feet), New South Wales; in November, four specimens.

648. (205b.) *Phil. iphigenes*, n.sp.

♂♀. 26-31 mm. Head ochreous-white. Palpi fuscous-grey, apex of second joint and posterior edge of terminal joint white. Antennæ grey. Thorax white, becoming dark fuscous anteriorly. Abdomen whitish-grey. Legs dark fuscous, posterior pair ochreous-whitish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin obliquely rounded; white; markings dark fuscous, somewhat suffused; a streak along costa from $\frac{1}{3}$ to $\frac{2}{3}$, in ♀ to middle only; a rather narrow slightly curved fascia near base; a small round spot in disc at $\frac{1}{3}$, a second above middle, connected with costa at $\frac{2}{3}$ by an oblique streak, a third beneath first and a fourth beneath second coalescing to form a crescentic mark; a crescentic mark in disc at $\frac{2}{3}$; a cloudy lighter

patch towards middle of inner margin; an outwards-curved line from $\frac{5}{8}$ of costa to before anal angle, indented beneath costa, emitting thence a cloudy inwards-curved fascia which touches discal crescentic mark, and rejoins it above inner margin; a variable suffusion towards apex; a hindmarginal row of cloudy dots: cilia ochreous-whitish, with a dark grey interrupted line. Hindwings grey, ochreous-tinged; cilia pale whitish-ochreous-grey, with a faint darker line.

Mount Kosciusko (4000-4600 feet), New South Wales; Fernshaw, Victoria; in December and January, six specimens.

649. (207a.) *Phil. cosmocrates*, n.sp.

♂♀. 20-22 mm. Head and thorax ochreous-whitish, margins more ochreous. (Palpi broken.) Antennæ whitish. Abdomen whitish-ochreous. Legs fuscous, posterior pair whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; white; markings bright yellow-ochreous; a rather narrow fascia from costa near base, not reaching inner margin; a flattened-triangular patch on costa towards middle, in ♀ narrower and more elongate, extending further towards base; a transverse bar in disc at $\frac{1}{3}$, touching costal patch, and sometimes also connected with a suffusion along inner margin; a crescentic mark in disc at $\frac{2}{3}$, its lower extremity sometimes connected with anterior bar by an ill-defined streak; an outwards-curved line from $\frac{5}{8}$ of costa to before anal angle, dilated on costa, indented beneath costa, emitting thence a narrow inwards-curved fascia touching discal crescentic mark and rejoining it above inner margin; a hindmarginal row of cloudy dots: cilia whitish-ochreous. Hindwings ochreous-grey; cilia whitish-grey-ochreous, with a faint darker line.

Duaringa, Queensland; three specimens sent by Mr. G. Barnard, all partially imperfect.

650. (207b.) *Phil. microxantha*, n.sp.

♂♀. 14-16 mm. Head, palpi, and thorax deep ochreous-yellow, second joint of palpi sometimes partially fuscous;

shoulders dark fuscous. Antennæ grey, base yellowish. Abdomen light yellowish. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; deep ochreous-yellow; markings dark fuscous, purplish-tinged; a streak along costa from base to $\frac{2}{3}$, posteriorly attenuated; a dot in disc at $\frac{2}{3}$, and a second on fold rather obliquely before it, both sometimes wholly absent; sometimes a cloudy streak from first dot to costa at $\frac{2}{3}$; two dots transversely placed in disc at $\frac{2}{3}$; a fine cloudy line from costa near apex to anal angle, dilated on costa, sinuate inwards on upper half and bent outwards on lower half, sometimes entirely absent: cilia ochreous-yellow, sometimes with a grey spot above apex. Hindwings grey; cilia pale ochreous-yellowish.

Albany, West Australia; in September and October, common. A variable but distinct species.

651. (215a.) *Phil. metachroa*, n.sp.

♂♀. 21-24 mm. Head and thorax deep or pale ochreous-yellow. Palpi pale yellowish, second joint dark grey except apex. Antennæ whitish-yellowish, annulated with grey. Abdomen grey. Legs dark grey, posterior tibiæ light grey or whitish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; dull-ochreous-yellow, variable in depth, sometimes more or less densely suffused throughout with pale greyish; cilia light ochreous-yellow, on hindmargin with apical $\frac{2}{3}$ sometimes light grey. Hindwings grey; cilia grey or whitish-grey, sometimes yellowish-tinged round apex.

Mount Kosciusko (5000 feet), New South Wales; in January, common. The form of variation is curious; but the species is always to be recognised from the closely allied *P. tyroxantha* and *P. melirrhoa* by the grey abdomen.

652. (216a.) *Phil. holocrossa*, n.sp.

♂♀. 16-21 mm. Head orange. Palpi grey, above yellowish. Antennæ grey. Thorax orange, sometimes greyish-tinged. Abdomen dark grey, lateral margins and anal tuft yellow. Legs

dark grey, posterior pair ochreous-yellow. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; yellow-orange: cilia wholly rather dark grey. Hindwings and cilia rather dark grey.

York, West Australia; in November, common.

653. (220a.) *Phil. anazancla*, n.sp.

♀. 24-27 mm. Head yellow-orange. Palpi dark grey, base and apex of second joint whitish. Antennæ grey. Thorax dark fuscous, sides posteriorly and apex of patagia white. Abdomen whitish-ochreous. Legs dark fuscous, posterior pair pale ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin slightly sinuate, oblique; silvery-white, dorsal third suffused with pale yellowish; markings fuscous, rather darker-margined; a moderate rather irregular-edged streak beneath costa from base to apex; an irregular streak from disc beyond middle to close above anal angle, closely preceded by a small spot on fold, and connected by an ill-defined upwards-attenuated streak from near its posterior extremity with subcostal streak near apex, continued through it to costa; a hindmarginal series of confluent dots: cilia grey-whitish, becoming white at apex and grey at anal angle. Hindwings grey; cilia pale ochreous-yellowish.

Perth, West Australia; in October, two specimens.

654. (220b.) *Phil. campyla*, n.sp.

♂♀. 25-26 mm. Head ochreous-yellow. Palpi blackish, towards base and above white. Antennæ grey. Thorax dark grey, anterior margin yellowish, apical half of patagia white. Abdomen whitish-ochreous. Legs dark fuscous, posterior pair pale yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; white; a moderate somewhat irregular ochreous-yellow subcostal streak from base to apex; a similar streak from beneath middle of disc near inner and hind margins to apex, posteriorly attenuated,

meeting subcostal streak: cilia white, becoming dark grey towards anal angle. Hindwings whitish-grey, yellowish-tinged; cilia whitish-yellowish, with a cloudy greyish shade.

Beechworth, Victoria; two specimens (Coll. Lucas).

655. (220c.) *Phil. iosema*, n.sp.

♂♀. 25-26 mm. Head deep ochreous-yellow. Palpi white, in front dark fuscous except towards the base. Antennæ grey. Thorax dark fuscous or ochreous-brown, lateral margins posteriorly yellow, apex of patagia white. Abdomen light ochreous-yellowish. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin slightly sinuate, oblique; silvery-white; markings rather dark fuscous, more or less wholly suffused with bright orange-ochreous; a moderate streak beneath costa from base to apex; a streak along inner margin from near base to $\frac{3}{4}$, dilated in middle, attenuated to both extremities; an irregular streak from fold before middle, almost or quite touching dorsal streak, to subcostal streak before apex, slightly curved downwards, dilated above anal angle; a dot in disc beyond middle, sometimes connected with this; some indistinct dots on hindmargin: cilia light grey, on anal angle darker, at apex yellowish-tinged, on costa white. Hindwings rather light grey, yellowish-tinged, especially on edges; cilia light ochreous-yellowish.

Bathurst (2500 feet), New South Wales; in November, three specimens.

656. (221a.) *Phil. lathicentra*, n.sp.

♂♀. 16-21 mm. Head ochreous-yellow. Palpi dark fuscous, above and at base white. Antennæ grey. Thorax ochreous-fuscous, with a white stripe on each side of back. Abdomen pale whitish-ochreous. Legs dark fuscous, posterior pair pale whitish-ochreous. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, oblique; silvery-white; markings rather dark fuscous, more or less suffused with bright ochreous; a slender line along costal edge, with a more or less

strong dilation about $\frac{3}{4}$; a moderate straight streak above middle from base to apex, connected by a bar at $\frac{2}{3}$ (rarely absent) with dilation of costal line; a moderate streak along inner margin from near base to anal angle; a narrow oblique bar near hindmargin from central streak to dorsal streak; a hindmarginal row of cloudy subconfluent dots: cilia light grey, ochreous-tinged, more or less whitish towards middle of inner margin, on costa white. Hindwings grey or whitish-grey, slightly ochreous-tinged, especially on edges; cilia ochreous-whitish, more ochreous towards base.

Carnarvon, Perth, and Albany, West Australia; from October to December, common.

657. (222a.) *Phil. megalocentra*, n.sp.

♂. 23-24 mm. Head ochreous-yellow. Palpi dark fuscous, above and at base white. Antennæ grey. Thorax ochreous-brown, paler on back, with a white stripe on each side of back. Abdomen whitish-ochreous, yellowish-tinged. Legs dark fuscous, posterior pair whitish-ochreous. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin sinuate, oblique; silvery-white; markings brown, suffused with deep yellow-ochreous; a line along costal edge, dilated about $\frac{3}{4}$; a moderate straight streak above middle from base to apex, with a slight projection upwards in middle, a slight projection downwards at $\frac{2}{3}$, and connected by a bar at $\frac{1}{4}$ with dilation of costal line; a rather narrow streak along inner margin from near base to anal angle, with a slight projection upwards in middle; a small elongate free spot on fold beneath middle of disc; a narrow oblique bar near hindmargin from central streak to dorsal streak; a hindmarginal row of subconfluent dots: cilia light grey, ochreous-tinged, towards middle of hindmargin whitish, on costa white. Hindwings light grey, ochreous-tinged, especially on edges; cilia pale whitish-ochreous, more ochreous towards base.

Geraldton, West Australia; in November, three specimens.

658. (224a.) *Phil. anarrecta*, n.sp.

♀. 19 mm. Head white. Palpi white, extreme base fuscous. Antennæ white, annulated with fuscous. Thorax white, posterior margin fuscous. Abdomen ochreous-whitish. Legs ochreous-whitish, anterior pair infuscated. Forewings elongate, posteriorly somewhat dilated, costa moderately arched, apex round-pointed, hindmargin nearly straight, oblique; snow-white; a dark fuscous streak along basal fourth of costa; a slender dark brown fascia from middle of costa to beyond middle of inner margin, sharply angulated inwards in middle, lower third abruptly becoming bright yellow-ochreous; a nearly straight slender dark brown fascia from costal extremity of first fascia to near anal angle, not quite reaching it; a rather broader dark brown streak from second fascia above middle to costa about $\frac{3}{4}$; a rather broad bright ochreous-yellow curved fascia from middle of this streak to anal angle; a slender dark fuscous hindmarginal line, forming dots on veins: cilia rather dark brown, on costa white, on anal angle whitish-ochreous. Hindwings very pale whitish-ochreous, slightly fuscous-tinged; cilia pale whitish-ochreous.

Mount Kosciusko (4000 feet), New South Wales; in January, one specimen.

659. (225a.) *Phil. orgiastis*, n.sp.

♂♀. 17-19 mm. Head dark fuscous on crown, face whitish-yellowish. Palpi whitish-yellowish, apex of second joint and anterior edge of terminal joint dark fuscous. Antennæ dark fuscous. Thorax whitish-yellowish. Abdomen dark grey. Legs dark fuscous, ringed with yellowish, middle and posterior tibiæ ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin slightly sinuate, oblique; dark fuscous, slightly purplish-tinged; a suffused irregular ochreous-whitish fascia from $\frac{2}{5}$ of costa, narrowed beneath and not quite reaching inner margin at $\frac{2}{5}$, containing a dark fuscous dot near its posterior edge above middle; a subquadrate well-defined ochreous-whitish spot on inner margin at $\frac{3}{4}$, reaching half across wing; a

few whitish scales in disc above this; a subtriangular ochreous-whitish spot on costa at $\frac{3}{4}$, reaching half across wing; some whitish scales or indistinct dots on hindmargin: cilia light ochreous-yellow, with an interrupted dark fuscous line near base, at apex and anal angle wholly dark fuscous. Hindwings yellow-orange; hindmarginal edge and a rather narrow subtriangular apical patch dark fuscous; cilia in ♂ grey-yellowish, at apex and on basal third fuscous, in ♀ wholly fuscous-grey.

Northampton and York, West Australia; two specimens in November, apparently attached to an *Acacia*. *P. thermochroa* is very near this, and should be transferred from *Peltophora* to this position, though the ♂ is still unknown; it is easily distinguished by the snow-white markings and cilia. *P. theorica*, it is reasonable to suppose, will also prove to be referable here when the ♂ is known, as it clearly marks the transition from the preceding to the following species, and may certainly be transferred provisionally.

660. (225b.) *Phil. ophiodes*, n.sp.

♂. 23 mm. Head ochreous-white. Palpi whitish, second joint externally blackish except towards apex. Antennæ grey. Thorax blackish. Abdomen ochreous-yellowish, before apex and towards base mixed with black. Legs black, ringed with yellowish, posterior pair yellowish. Forewings elongate, costa gently arched, apex obtuse, hindmargin obliquely rounded; yellow-ochreous; markings black; a small spot on base of costa; a sinuous irregular streak proceeding from submedian fold before middle to middle of costa, semicircularly curved and returning to inner margin before anal angle, thence continued up hindmargin to apex, where it is considerably dilated; some black scales along posterior half of costa: cilia yellow-ochreous, towards anal angle mixed with dark grey. Hindwings dark fuscous; cilia pale ochreous, with a thick dark fuscous basal line, below middle of hindmargin wholly dark fuscous.

Victoria; one specimen (Coll. Lucas). *P. sigmophora* is to be transferred to this position from *Eriodyta*; it is nearly allied to

P. ophiodes, but immediately separated by the white groundcolour and whitish-ochreous hindwings.

661. (225c.) *Phil. chalcozantha*, n.sp.

♂. 21 mm. Head orange. Palpi grey, above yellowish. Antennæ dark grey. Thorax dark purple-fuscous. Abdomen and legs dark fuscous, posterior legs ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; bright yellow; markings dark purple-fuscous; a narrow streak along costa from base to $\frac{2}{3}$, posteriorly leaving costal edge yellow; a rather narrow transverse spot in disc at $\frac{2}{3}$; a rather narrow straight fascia from $\frac{2}{3}$ of costa to anal angle; a streak along hindmargin from apex to near anal angle, attenuated beneath: cilia dark fuscous. Hindwings and cilia dark fuscous.

Glen Innes (3500 feet), New South Wales; in December, one specimen.

662. (225d.) *Phil. synauges*, n.sp.

♀. 24 mm. Head deep yellow. Palpi grey, above whitish-ochreous. Antennæ grey. Thorax grey, suffused with brassy-yellowish towards back, posterior extremity purplish. Abdomen grey. Legs dark grey, middle tibiæ pale yellowish, posterior pair ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique, light ochreous-yellow; markings dark purple-fuscous; costa grey towards base; a round dot in disc at $\frac{2}{3}$, and another beneath it on fold; a narrow fascia-like streak from beneath costa at $\frac{2}{3}$ to anal angle, somewhat indented in disc; a cloudy streak along upper half of hindmargin: cilia whitish-yellowish, on anal angle grey. Hindwings pale yellow, on costal half suffusedly mixed with fuscous-grey; cilia whitish-ochreous, suffused with grey on lower half of hindmargin.

Mount Kosciusko (3000 feet), New South Wales; in January, one specimen.

663. (225e.) *Phil. amoebaea*, n.sp.

♂♀. 19-22 mm. Head orange. Palpi ochreous-yellow, base of second joint dark fuscous, terminal joint and apex of second dark fuscous in front. Antennæ dark fuscous. Thorax deep yellow, anterior margin dark fuscous. Abdomen rather dark grey, sides and apex ochreous-yellowish. Legs dark fuscous, middle tibiae mostly yellowish, posterior pair ochreous-yellow. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; deep yellow; markings dark fuscous; four rather narrow tolerably parallel fasciæ; first subbasal, produced along costa to $\frac{1}{4}$; second at $\frac{1}{3}$, not reaching costa, rarely touching costal projection of first; third beyond middle, scarcely reaching costa, connected with second by a subcostal streak; fourth from $\frac{1}{2}$ of costa to anal angle; a rather thick bar from apex to middle of fourth fascia, but often not quite connected with it: cilia deep ochreous-yellow, on apex and anal angle dark fuscous. Hindwings dark grey; cilia grey, rarely paler and yellowish-tinged beneath apex.

Perth, West Australia; in November, common. This and the next two species are very closely allied, but the points of difference indicated are quite constant.

664. (225f.) *Phil. tetragona*, n.sp.

♂♀. 17-21 mm. Head orange. Palpi orange, base and apex of second joint, and anterior edge of terminal joint blackish. Antennæ dark grey. Thorax orange, anterior margin and posterior extremity blackish. Abdomen pale yellowish-ochreous, more or less grey towards base, anal tuft ochreous-yellow. Legs dark fuscous; middle tibiae ochreous-yellow except extremities, posterior pair ochreous-yellow. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; deep yellow, sometimes becoming whitish in disc posteriorly; markings blackish; four rather narrow tolerably parallel fasciæ; first subbasal, second at $\frac{1}{3}$, third beyond middle, second and third not reaching

costa, all three connected by a slender subcostal streak; fourth from $\frac{1}{5}$ of costa to anal angle, somewhat bent or curved inwards in middle; a rather irregular streak along hindmargin from apex to near anal angle: cilia ochreous-yellowish, at apex and anal angle blackish-grey, sometimes wholly blackish-grey. Hindwings dark grey; cilia pale ochreous-yellowish, on upper half of hindmargin more or less wholly grey.

Albany, West Australia; in December, common.

665. (225g.) *Phil. echidnias*, n.sp.

♂♀. 15-19 mm. Head orange. Palpi ochreous-yellow, base of second joint and anterior edge of terminal joint sometimes grey. Antennæ grey, sometimes annulated with yellow-whitish. Thorax deep yellow, anterior margin and posterior extremity dark fuscous. Abdomen ochreous-yellowish. Legs dark fuscous, ringed with pale yellowish, middle tibiæ and posterior pair ochreous-yellow. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; yellow; markings dark fuscous; four slender tolerably parallel fasciæ; first subbasal, produced along costa to $\frac{1}{5}$; second at $\frac{1}{3}$, not reaching costa; third beyond middle, scarcely reaching costa, connected with second by a slender sometimes interrupted subcostal streak; fourth from $\frac{1}{5}$ of costa to anal angle; a rather thick bar from apex to middle of fourth fascia, but not quite connected with it: cilia ochreous-yellow, at apex and anal angle dark fuscous. Hindwings dark grey; cilia light ochreous-yellow, with a grey apical spot, rarely greyish-tinged on upper half of hindmargin.

Geraldton, West Australia; in November, seven specimens.

666. (227a.) *Phil. caminias*, n.sp.

♂♀. 15-18 mm. Head and thorax bright orange. Palpi orange, anterior edge of terminal joint grey. Antennæ grey. Abdomen pale grey, more or less whitish-ochreous posteriorly. Legs grey, posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex acute, hindmargin sinuate, very oblique;

bright orange; extreme costal edge sometimes whitish or white from $\frac{1}{4}$ to $\frac{3}{4}$ (more marked in Northern specimens): cilia light glossy grey. Hindwings grey; cilia grey-whitish, with a grey basal line.

Carnarvon, Geraldton, and Albany, West Australia; from October to December, common.

667. (230a.) *Phil. catachrysa*, n.sp.

♂♀. 17-19 mm. Head orange. Palpi pale yellowish, second joint towards middle, and anterior edge of terminal joint rather dark fuscous, sometimes wholly suffused with dark fuscous. Antennæ, thorax, abdomen, and legs dark fuscous; hairs of posterior tibiæ mixed with pale yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; orange, sometimes sprinkled with grey and purplish; base in ♂ narrowly dark fuscous; a dark purplish-fuscous apical patch occupying $\frac{2}{3}$ of wing, its anterior edge rather ill-defined, somewhat rounded off towards costa and inner margin, often tending to show a cloudy projection beneath costa: cilia dark fuscous. Hindwings and cilia dark fuscous.

Glen Innes (4500 feet) and Bathurst (2700 feet), New South Wales; in November and December, common.

668. (230b.) *Phil. automima*, n.sp.

♂. 16-17 mm. Head and thorax ochreous-yellow. Palpi yellowish, second joint towards middle, and anterior edge of terminal joint dark fuscous. Antennæ, abdomen, and legs dark fuscous, posterior legs pale ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; ochreous-yellow, variable in depth; a rather dark brown apical patch occupying $\frac{2}{3}$ of wing, its anterior edge rather darker, straight in disc, rather rounded off on inner margin, on costa margined by a slender ill-defined streak of groundcolour reaching nearly to apex: cilia rather dark brown. Hindwings and cilia dark fuscous.

Bathurst (2700 feet), New South Wales; in November, three specimens. Whether this species is really distinct from the preceding must be proved by further observations.

P. subpunctella should be referred here from *Eriodyta*, and may be placed next to *P. homotona*.

669. (236a.) *Phil. erythrastis*, n.sp.

♀. 20-23 mm. Head and thorax pale ochreous-rosy. Palpi whitish-rosy, lower $\frac{2}{3}$ of second joint, and anterior edge of terminal joint sometimes infuscated. Antennæ white annulated with grey. Abdomen pale whitish-ochreous. Legs ochreous-whitish, anterior pair infuscated. Forewings elongate, costa gently arched, apex obtuse, hindmargin nearly straight, oblique; pale rosy, slightly ochreous-tinged, on costa clear rosy, towards inner margin more brownish-tinged; a cloudy rather dark fuscous suffusion forming an inwardly oblique streak from anal angle, reaching half across wing: cilia pale ochreous-rosy, apical half fuscous. Hindwings ochreous-whitish; cilia pale whitish-ochreous; sometimes rosy-tinged round apex.

Sydney, New South Wales; in March, two specimens. A species of abnormal facies and doubtful affinity.

670. (188b.) *Phil. amalodes*, n.sp.

♂. 22 mm. Head and thorax whitish-ochreous. Palpi dark fuscous, above whitish-ochreous. Antennæ dark fuscous. Abdomen ochreous-whitish. Legs dark fuscous, posterior pair whitish-ochreous. Forewings very elongate, costa almost straight, apex round-pointed, hindmargin very obliquely rounded; whitish-ochreous, slightly yellowish-tinged; a moderate light brown streak, rather suffused with groundcolour, close beneath costa from base to $\frac{3}{4}$, terminating in an undefined white suffusion, and leaving costal edge slenderly white; a very inwardly oblique brown wedge-shaped streak from costa near apex, followed by a suffused white mark; a fuscous dot in disc at $\frac{2}{3}$, beneath which is

a small longitudinal brownish suffusion: cilia very pale whitish-yellowish. Hindwings pale whitish-ochreous, fuscous-tinged, and with veins obscurely infuscated; cilia very pale whitish-yellowish.

Fernshaw, Victoria; one specimen (Coll. Lucas).

671. (226a.) *Phil. aëtopis*, n.sp.

♂. 18 mm. Head and thorax bright orange. Palpi orange, lower half of second joint dark grey, terminal joint white with anterior edge dark grey. Antennæ dark grey. Abdomen grey, anal tuft pale whitish-ochreous. Legs dark grey, posterior tibiae whitish. Forewings elongate, costa gently arched, apex subacute, hindmargin faintly sinuate, very oblique; bright orange; a small round dark fuscous spot in disc at $\frac{2}{3}$: cilia glossy pale grey, round apex more whitish-grey and with base yellow-scaled. Hindwings grey; cilia light grey.

Fernshaw, Victoria; one specimen (Coll. Lucas).

672. (201.*) *Phil. melodora*, n.sp.

♂. 20 mm. Head ochreous-whitish. Palpi ochreous-whitish, lower half of second joint dark fuscous, terminal joint dark fuscous except towards base. Antennæ dark fuscous. Thorax pale ochreous-yellowish, anterior half dark fuscous. Abdomen light ochreous-yellowish, posterior half (except anal tuft) suffused with dark grey. Legs dark fuscous, ringed with ochreous-yellowish, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; yellow-ochreous; markings dark fuscous; four large subtriangular spots on costa, reaching about half across wing, first at base, second about $\frac{1}{3}$, third about $\frac{2}{3}$, fourth before apex; a transverse blackish-fuscous bar in disc at $\frac{1}{3}$, posteriorly slenderly white-margined, its lower extremity connected with a prolongation of apex of first costal spot, its upper extremity touching second; an irregular suffused fuscous patch on lower part of hindmargin, extending to third and fourth costal spots, and containing indications of a curved darker line proceeding from apex

of fourth, and a few white scales: cilia rather dark fuscous, at apex and beneath anal angle ochreous-yellowish. Hindwings dark fuscous; cilia fuscous, towards anal angle lighter and yellowish-tinged.

Fernshaw, Victoria; one specimen (Coll. Lucas).

The following is a tabulation of the 105 described species of *Philobota*.

- | | |
|---|---------------------------|
| 1. Forewings pale rosy | 669. <i>erythrastis</i> . |
| Forewings not pale rosy..... | 2. |
| 2. Head above rather dark fuscous or grey | 3. |
| Head above not dark fuscous or grey... | 12. |
| 3. Forewings with ochreous-white subcostal streak..... | 636. <i>argotoxa</i> . |
| Forewings without ochreous-white subcostal streak | 4. |
| 4. Hindwings yellow | 5. |
| Hindwings grey | 7. |
| 5. Forewings unicolorous | 183. <i>ellenella</i> . |
| Forewings with white markings | 6. |
| 6. Forewings with hindmarginal cilia towards middle white | 259. <i>thermochroa</i> . |
| Forewings with hindmarginal cilia towards middle yellow..... | 659. <i>orgiastis</i> . |
| 7. Forewings with a pale dorsal streak indicated | 646. <i>oriphaea</i> . |
| Forewings with a pale dorsal streak not indicated..... | 8. |
| 8. Forewings without markings..... | 184. <i>monolitha</i> . |
| Forewings with markings | 9. |
| 9. Forewings sprinkled with whitish | 10. |
| Forewings not sprinkled with whitish... | 642. <i>scieropa</i> . |
| 10. Forewings with a black fascia near base | 200. <i>pedetis</i> . |
| Forewings without a black fascia near base | 11. |

- | | |
|---|----------------------------|
| 11. Forewings rather dark grey | 199. <i>erebodes</i> . |
| Forewings pale fuscous-grey strewn with whitish | 639. <i>hiracistis</i> . |
| 12. Head above yellow or orange (rarely with sides fuscous) | 13. |
| Head white, ochreous-whitish, or grey-whitish | 73. |
| 13. Forewings with four nearly parallel dark fuscous fasciæ | 14. |
| Forewings without four nearly parallel dark fuscous fasciæ | 16. |
| 14. Hindwings with cilia on lower half of hindmargin grey | 663. <i>amoebaea</i> . |
| Hindwings with cilia on lower half of hindmargin light yellowish..... | 15. |
| 15. Forewings with first and second fasciæ connected by a subcostal streak..... | 664. <i>tetragona</i> . |
| Forewings with first and second fasciæ not connected by a subcostal streak... | 665. <i>echidnias</i> . |
| 16. Forewings with a well-defined longitudinal streak | 17. |
| Forewings without a well-defined longitudinal streak | 53. |
| 17. Forewings with groundcolour yellow | 18. |
| Forewings with groundcolour not yellow | 34. |
| 18. Forewings with a posterior dark fascia... | 19. |
| Forewings without a posterior dark fascia | 24. |
| 19. Forewings with a dark fascia near base | 632. <i>chiastis</i> . |
| Forewings without a dark fascia near base | 20. |
| 20. Space beyond fascia fuscous-grey | 21. |
| Space beyond fascia yellow | 23. |
| 21. Inner margin dark fuscous... .. | 177. <i>arabella</i> . |
| Inner margin yellow | 22. |
| 22. With a dark fuscous spot in disc before middle..... | 661. <i>chalcocantha</i> . |

- Without a dark fuscous spot in disc
before middle..... 180. *irruptella*.
23. Hindwings with cilia towards anal angle
yellowish 178. *biophora*.
Hindwings with cilia wholly grey.... 179. *ancylotoxa*.
24. Forewings with a dark fuscous streak
along fold 186. *auriceps*.
Forewings without a dark fuscous streak
along fold..... 25.
25. Forewings with a dark costal streak not
reaching middle..... 650. *microxantha*.
Forewings with a dark costal streak
reaching beyond middle or more..... 26.
26. Forewings with short oblique dark streak
before apex..... 27.
Forewings without short oblique dark
streak before apex..... 30.
27. Forewings with a dark costal streak..... 28.
Forewings without a dark costal streak.. 188. *molliculella*.
28. Forewings with dark discal dots..... 637. *melanoxantha*.
Forewings without dark discal dots..... 29.
29. Thorax with shoulders dark fuscous..... 189. *latifissella*.
Thorax with anterior half wholly dark
fuscous..... 190. *hypocansta*.
30. Forewings with costal edge dark fuscous 31.
Forewings with costal edge not dark
fuscous..... 33.
31. With a red subcostal streak..... 218. *pretiosella*.
Without a red subcostal streak.. 32.
32. Forewings with cilia yellow 634. *monoloncha* ♂.
Forewings with cilia dark grey..... 217. *crocobapta*.
33. With a white costal streak..... 220. *adaptatella*.
Without a white costal streak..... 219. *anachorda*.
34. Forewings with groundcolour grey or
brown..... 35.

- Forewings with groundcolour white or whitish..... 38.
35. With an ochreous-white dorsal streak.... 198. *atmobola*.
Without an ochreous-white dorsal streak 36.
36. With a yellow subcostal streak..... 37.
Without a yellow subcostal streak..... 196. *acropola*.
37. Subcostal streak slender... 635. *thiogramma*.
Subcostal streak broad..... 181. *chrysopotama*.
38. With a dark fascia near before middle... 39.
Without a dark fascia near before middle 40.
39. With a streak from fascia along fold..... 223. *bractearella*.
Without a streak from fascia along fold 224. *trijugella*.
40. With a dark fuscous fascia close to base 41.
Without a dark fuscous fascia close to base..... 43.
41. Discal dots separate..... 638. *lysizona*.
Discal dots connected by a streak..... 42.
42. Thorax with shoulders only dark fuscous 205. *partitella*.
Thorax with anterior margin wholly dark fuscous..... 647. *melanoglypta*.
43. Forewings with a dark streak below middle..... 44.
Forewings without a dark streak below middle..... 48.
44. With a dark costal streak..... 222. *interlineatella*.
Without a dark costal streak.... 45.
45. With a dark dorsal streak..... 655. *iosema*.
Without a dark dorsal streak..... 46.
46. Subcostal streak with a tooth beneath... 225. *acutella*.
Subcostal streak without a tooth beneath 47.
47. Markings ochreous-yellow..... 654. *campyla*.
Markings dark fuscous .. 221. *brochosema*.
48. With two slender very oblique dark streaks from costa..... 49.
Without two slender very oblique dark streaks from costa 50.

- Forewings without a fuscous streak from anal angle to disc..... 65.
65. Forewings light yellow, with ill-defined dots..... 228. *euxantha*.
- Forewings deep yellow, with dark fuscous spot 229. *xanthiella*.
66. Forewings with cilia wholly yellow, or tips only grey 67.
- Forewings with cilia wholly grey..... 68.
67. Second joint of palpi dark grey..... 651. *metachroa*.
- Second joint of palpi wholly yellow..... 236. *electrodes*.
68. Thorax wholly yellow..... 69.
- Thorax with anterior half dark fuscous... 216. *melirrhoa*.
69. Second joint of palpi orange.. 70.
- Second joint of palpi dark fuscous..... 71.
70. Forewings with a blackish line at base of hindmarginal cilia..... 227. *monophaës*.
- Forewings without a blackish line at base of hindmarginal cilia..... 666. *caminias*.
71. Abdomen dark grey. 652. *holocrossa*.
- Abdomen whitish-ochreous..... 215. *tyroxantha*.
72. Forewings with groundcolour fuscous.... 644. *aeolias*.
- Forewings with groundcolour ochreous-brown..... 185. *catalampra*.
73. Forewings with a dark fuscous median fascia becoming yellow beneath..... 658. *anarrecta*.
- Forewings without a dark fuscous median fascia becoming yellow beneath..... 74.
74. With dark fuscous costal streak. 75.
- Without dark fuscous costal streak..... 88.
75. Forewings with groundcolour white or whitish 76.
- Forewings with groundcolour not white or whitish 82.
76. With dark fuscous fascia near base..... 77.
- Without dark fuscous fascia near base ... 79.

77. Anterior margin of thorax wholly dark
 fuscous..... 648. *iphiogenes*.
 Anterior margin of thorax not wholly
 dark fuscous..... 78.
78. Thorax with dark lateral stripe..... 638. *lysizona*.
 Thorax with shoulder spot only..... 212. *pruinosa*.
79. Forewings with dark median streak bent
 up to costa..... 204. *glaucoptera*.
 Forewings without dark median streak
 bent up to costa..... 80.
80. With a dark blotch on inner margin
 before middle..... 643. *marmorata*.
 Without a dark blotch on inner margin
 before middle..... 81.
81. Forewings with cilia more or less greyish 214. *productella*.
 Forewings with cilia wholly white..... 210. *chionoptera*.
82. With dark fuscous discal dots..... 83.
 Without dark fuscous discal dots..... 86.
83. With a white longitudinal streak..... 84.
 Without a white longitudinal streak..... 194. *phauloscopa*.
84. Base of costa white..... 195. *crepera*.
 Base of costa dark fuscous..... 85.
85. White subcostal streak reaching costa
 near base..... 197. *orinoma*.
 White subcostal streak not reaching costa
 near base..... 640. *olympias*.
86. Forewings with groundcolour very light
 grey..... 193. *nephelarcha*.
 Forewings with groundcolour not grey... 87.
87. Hindwings grey..... 634. *monoloncha* ♀.
 Hindwings whitish-ochreous, greyish-
 tinged..... 192. *xiphostola*.
88. Forewings with rosy markings..... 232. *occidua*.
 Forewings without rosy markings..... 89.
89. Forewings with four straight dark fasciæ 90.

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| Forewings without four straight dark fasciæ | 91. |
| 90. Third and fourth fasciæ confluent beneath | 645. <i>eriscota</i> . |
| Third and fourth fasciæ separate | 202. <i>herodiella</i> . |
| 91. Costa with three or four dark fuscous spots | 92. |
| Costa without three or four dark fuscous spots | 93. |
| 92. Groundcolour ochreous-yellow | 672. <i>melodora</i> . |
| Groundcolour ochreous-white | 213. <i>squalidella</i> . |
| 93. Groundcolour white | 94. |
| Groundcolour not white | 98. |
| 94. With a straight longitudinal dark streak | 95. |
| Without a straight longitudinal dark streak | 96. |
| 95. Streak reaching apex | 209. <i>agnesella</i> . |
| Streak not reaching apex | 208. <i>monogramma</i> . |
| 96. With a black sinuous streak | 243. <i>sigmophora</i> . |
| Without a black sinuous streak | 97. |
| 97. Anterior discal dots united into a bar | 649. <i>cosmocrates</i> . |
| Anterior discal dots free | 203. <i>hapala</i> . |
| 98. With dark streaks between veins | 234. <i>melanoploca</i> . |
| Without dark streaks between veins | 99. |
| 99. Without discal dots, or with one only | 100. |
| With three or more discal dots | 103. |
| 100. With a black sinuous streak | 660. <i>ophiodes</i> . |
| Without a black sinuous streak | 101. |
| 101. Hindwings whitish-ochreous, fuscous-tinged | 670. <i>amalodes</i> . |
| Hindwings not whitish-ochreous, fuscous-tinged | 102. |
| 102. Hindwings grey | 633. <i>lithochlora</i> . |
| Hindwings dark fuscous, often suffused with yellow | 182. <i>catascia</i> . |
| 103. Forewings with three discal dots | 104. |
| Forewings with five or six discal dots | 105. |

104. Forewings irrorated with dark grey..... 235. *pulverea*.
 Forewings not irrorated with dark grey 233. *homotona*.
105. Discal dots large, distinct..... 106.
 Discal dots obscure..... 211. *hydara*.
106. Hindwings pale whitish-ochreous..... 641. *araxolyca*.
 Hindwings grey..... 201. *leucomitra*.

COMPSOTROPHA, Meyr.

673. (241a.) *Comps. hemispila*, n.sp.

♂♀. 17-18 mm. Head, antennæ, thorax, abdomen, and legs whitish-ochreous; shoulders narrowly dark fuscous; anterior and middle legs dark fuscous. (Palpi broken.) Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex tolerably rounded, hindmargin almost straight, oblique; whitish-ochreous, with a few scattered black scales; base of costa blackish; a black dot in disc at $\frac{1}{3}$, a second somewhat beyond it on fold, and a third in disc beyond middle; a suboval erect cloudy dark fuscous spot on inner margin before anal angle, reaching half across wing; a row of large semi-circular black dots along hindmargin and apical $\frac{2}{3}$ of costa: cilia whitish-ochreous. Hindwings pale whitish-grey; cilia grey-whitish.

Warragul, Victoria; two specimens (Coll. Lucas).

674. (241b.) *Comps. xanthodelta*.

♂♀. 12-14 mm. Head rather dark fuscous, becoming pale yellowish between the antennæ and on face. Palpi pale yellowish, sprinkled with fuscous towards base. Antennæ dark fuscous. Thorax dark fuscous, patagia pale ochreous-yellow except at base. Abdomen grey. Legs grey, apex of joints pale yellowish. Forewings elongate, costa moderately arched, apex obtuse, hindmargin nearly straight, oblique; rather dark fuscous, posteriorly mixed with light rosy-purple, especially on margins; a light ochreous-yellow basal patch extending on costa to middle, where it includes a costal streak of groundcolour from base to $\frac{1}{3}$, and not quite reaching

inner margin, where it extends to $\frac{2}{3}$, its posterior edge whitish in disc, faintly sinuate; a light ochreous-yellow streak from middle of disc to anal angle, becoming white towards disc: cilia light purple-rosy sprinkled with fuscous, terminal third rather dark fuscous. Hindwings and cilia grey.

Deloraine and Hobart, Tasmania; Mount Lofty, South Australia; in November and December, locally common. A peculiar and striking species.

ERIODYTA, Meyr.

I propose to retain in this genus *E. contentella* only, and, by laying stress on characters drawn from the palpi rather than from the scaling of the head, to remove all the remainder into already established genera, as has been already in part indicated; viz. *E. sigmophora* and *E. subpunctella* into *Philobota*, as noted above; and *E. abductella*, *E. leptostola*, *E. hololeuca*, and *E. vernalis* into *Philonympha*. To the characters of *Philonympha* should be added: second joint of palpi with scales dilated and somewhat projecting beneath towards apex; this should be made the character to distinguish it from *Philobota*. The characters of *Eriodyta* should be modified to read: second joint of palpi not reaching base of antennæ.

PELTOPHORA, Meyr.

I have removed hence *P. orthogramma*, which I have recognised to belong to *Linosticha*; and *P. thermochroa* and *theorica*, which, as noted above, are transferred to *Philobota*. A tabulation of all the species is given at the end.

675. (252a.) *Pelt. epitoxa*, n.sp.

♂♀. 19-22 mm. Head orange. Palpi dark fuscous, above yellow. Antennæ dark fuscous, ciliations 3. Thorax deep yellow, anterior margin, patagia, and posterior extremity dark fuscous. Abdomen ochreous-yellowish. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin sinuate, oblique; bright deep yellow; markings greyish-purple densely irrorated with blackish; a

small spot on base of inner margin ; a slender streak along costa from base to $\frac{2}{3}$, attenuated to a fine line anteriorly, sometimes continued slenderly to apex ; a narrow rather irregular fascia from middle of costa to beyond middle of inner margin, rather angulated inwards above middle, sometimes interrupted in disc ; a streak along inner margin from $\frac{1}{3}$, rather dilated where it meets central fascia, continued more slenderly along hindmargin to apex ; a transverse spot in disc at $\frac{3}{4}$, often connected above with a triangular apical spot, and lower extremity usually bent to touch hindmarginal streak above anal angle : cilia rather dark grey. Hindwings grey, apex narrowly suffused with whitish-ochreous ; cilia whitish-ochreous, more or less suffused with pale greyish except towards apex.

Carnarvon and Geraldton, West Australia ; in October and November, common.

676. (252b.) *Pelt. cremantis*, n.sp.

♂. 21 mm. Head orange. Palpi dark fuscous, above yellowish. Antennæ grey, ciliations $3\frac{1}{2}$. Thorax light yellow, anterior margin and posterior extremity dark fuscous. Abdomen light ochreous-yellowish. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin somewhat sinuate, oblique ; light yellow ; markings dark purplish-fuscous ; a narrow subbasal fascia, not quite reaching costa, shortly produced along inner margin ; a slender somewhat irregular inwards-curved fascia from middle of costa to beyond middle of inner margin, where it is dilated into a triangular spot ; a transverse spot outlined in disc at $\frac{3}{4}$, upper half filled with dark fuscous, lower half open beneath and with lower posterior angle suffusedly produced ; a slender slightly outwards-curved fascia from $\frac{3}{4}$ of costa to anal angle, indented above middle so as to touch upper extremity of discal spot ; an irregular streak along upper half of hindmargin, broadest at its middle : cilia light ochreous-yellow, basal half mixed with fuscous, at apex and anal angle wholly grey. Hindwings grey ; cilia light ochreous-yellowish.

Geraldton, West Australia ; in November, one specimen.

677. (252c.) *Pelt. mychias*, n.sp.

♂♀. 20-23 mm. Head orange. Palpi dark fuscous, internally whitish-ochreous or whitish. Antennæ dark fuscous, ciliations $3\frac{1}{2}$. Thorax whitish-ochreous or ochreous-white, anterior margin, outer side of patagia, and a posterior spot dark fuscous. Abdomen pale whitish-ochreous, anal tuft yellowish. Legs dark grey, posterior pair ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin sinuate, oblique; pale whitish-ochreous; markings blackish; an irregular upwards-curved streak from middle of base to $\frac{1}{4}$ of disc, posteriorly terminating in three projections; costal edge slenderly black from base to $\frac{2}{3}$, dilated towards first line; a rather cloudy line from $\frac{2}{3}$ of costa to middle of inner margin, twice or thrice subdentate; a rather thick line from $\frac{3}{4}$ of costa to anal angle, sharply angulated outwards in middle, rather indented inwards beneath costa; a transverse linear spot in disc at $\frac{2}{3}$, upper extremity often touching indentation of second line, lower extremity more or less connected by a cloudy mark with second line near anal angle; a rather large subtriangular apical spot; a hindmarginal row of cloudy dots: cilia pale whitish-ochreous, basal half sometimes obscurely barred with grey, at anal angle wholly grey. Hindwings grey; cilia whitish-ochreous, greyish-tinged at base towards middle of hindmargin.

Geraldton, West Australia; in October and November, confined apparently to a limited space of a few square yards, but there very common; I could perceive nothing in the locality different from the surrounding bush.

678. (252d.) *Pelt. calliophthalma*, n.sp.

♀. 17 mm. Head orange-yellow. Palpi dark fuscous, above and at base yellowish. Antennæ grey. Thorax deep yellow, with a dark fuscous band behind collar. Abdomen whitish-ochreous. Legs dark fuscous, middle tibiæ deep yellow except at base and apex, posterior pair whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin somewhat sinuate, oblique; bright deep yellow; markings black

sprinkled with grey ; a moderately large irregularly outlined ring in disc at $\frac{1}{3}$, its posterior edge connected by an oblique streak with middle of costa, and by a small spot with inner margin beyond middle ; a nearly straight rather narrow fascia from $\frac{3}{4}$ of costa to inner margin before anal angle, containing a small round white spot in middle ; a rather small oblique wedge-shaped apical spot : cilia deep yellow, at apex and towards anal angle dark grey. Hindwings grey ; cilia light grey, darker towards base, beneath apex ochreous-whitish towards tips.

Geraldton, West Australia ; in November, one specimen.

679. (252e.) *Pelt. amphitoxa*, n.sp.

♀. 15 mm. Head orange-yellow. Palpi dark fuscous, internally light yellowish. Antennæ grey. Thorax orange-yellow, anterior half and a small spot near posterior extremity dark purple-fuscous. Abdomen whitish-ochreous. Legs dark grey, posterior pair whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique ; bright deep yellow ; markings dark purple-fuscous ; a moderate line from $\frac{2}{3}$ of costa to inner margin before middle, angulated outwards above middle ; a slightly thicker line from $\frac{3}{4}$ of costa to anal angle, slightly curved inwards ; a rather narrow hindmarginal fascia from apex to anal angle, leaving a narrow streak of ground-colour on lower half of hindmargin : cilia deep yellow, at apex and anal angle dark grey. Hindwings grey ; cilia grey, beneath apex yellow-whitish towards tips.

Geraldton, West Australia ; in November, one specimen.

680. (254a.) *Pelt. melanocrossa*, n.sp.

♂♀. 17-21 mm. Head orange. Palpi dark fuscous, above yellowish. Antennæ dark fuscous, ciliations 4. Thorax deep yellow, anterior margin broadly dark fuscous. Abdomen ochreous-yellow, base of segments dark grey. Legs dark grey, posterior tibiae ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin slightly sinuate, oblique ; bright

deep yellow ; markings purple-blackish ; a slender fascia from costa near base to $\frac{1}{3}$ of inner margin ; a narrow fascia from costa before middle to middle of inner margin, dilated on costa, constricted above middle, slightly angulated outwards in middle, connected on inner margin with first fascia ; a rather narrow fascia from $\frac{3}{4}$ of costa to inner margin before anal angle, somewhat angulated inwards in middle, where it is connected by a bar with second fascia ; a slender sometimes interrupted outwards-curved line from third fascia near costa to anal angle, where it is dilated and again meets third fascia ; a rather broad streak along upper half of hindmargin : cilia blackish-grey. Hindwings dark grey ; cilia dark grey, on costa and towards anal angle whitish-yellowish.

Geraldton, Perth, and York, West Australia ; in November, five specimens. Nearly allied to *P. argutella*, but immediately separable by the wholly blackish-grey cilia of forewings.

681. (260a.) *Pelt. charaxias*, n.sp.

♂. 18mm. Head white. Palpi white, basal half of second joint blackish. Antennæ grey, ciliations 4. Thorax white, anterior margin blackish. Abdomen whitish. Legs dark fuscous, apex of joints and posterior pair whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin rounded, rather strongly oblique ; white, slightly yellowish-tinged ; markings grey mixed with black ; a thick streak along basal fifth of costa ; an irregular outwards-angulated line from apex of this to $\frac{1}{4}$ of inner margin ; an irregular line from $\frac{1}{3}$ of costa to middle of inner margin, strongly dentate beneath costa and in middle, upper dentation connected with costa beyond middle by a cloudy mark, lower half margining a triangular dorsal spot which extends to near anal angle, and includes a white dot in its apex ; a trifurcate mark in disc at $\frac{2}{3}$, anteriorly touching apex of dorsal spot ; an outwards-angulated line from $\frac{3}{4}$ of costa to anal angle, sinuate inwards on upper half, forming a small spot on costa ; a dot on costa near apex ; a moderate cloudy apical spot, connected with a

subconfluent series of cloudy hindmarginal dots : cilia white, basal half obscurely barred with grey. Hindwings grey-whitish, hindmarginal edge greyer ; cilia grey-whitish, with a faint grey line.

Tasmania ; one specimen received from Mr. G. Barnard.

682. (261a.) *Pelt. avariantis*, n.sp.

♂. 21 mm. Head light ochreous-orange. Palpi dark fuscous, above whitish-yellowish. Antennæ dark fuscous, ciliations 3. Thorax and abdomen dark fuscous. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin slightly sinuate, oblique ; dark brown ; markings ochreous-white ; a broad fascia near base, not reaching costa ; a moderate direct fascia about middle, not reaching costa or inner margin ; a small irregular spot beneath costa at $\frac{3}{4}$, and a second on inner margin at $\frac{3}{4}$; a narrow inwards-angulated fascia from costa near apex to anal angle, posteriorly rather ill-defined : cilia rather dark brown. Hindwings ochreous-orange, hindmarginal edge brownish-tinged ; cilia rather dark brown.

Melbourne, Victoria ; one specimen received from Mr. Kershaw.

683. (263a.) *Pelt. mesodesma*, n.sp.

♂♀. 15-18 mm. Head dark fuscous, with some pale yellowish scales on sides. Palpi dark fuscous, above pale yellowish. Antennæ dark fuscous, ciliations 4. Thorax, abdomen, and legs dark fuscous, posterior legs whitish-yellow. Forewings elongate, costa moderately arched, apex obtuse, hindmargin obliquely rounded ; rather dark fuscous ; a moderate irregular cloudy whitish fascia from middle of costa to $\frac{2}{3}$ of inner margin, in ♀ only obsoletely indicated : cilia rather dark fuscous, terminal third yellow-whitish from beneath apex to near anal angle. Hindwings ochreous-yellow ; a slender dark fuscous border along inner and hind margins, irregularly dilated at apex ; cilia rather dark fuscous, towards anal angle pale yellowish.

York, West Australia ; in October, two specimens.

684. (267a.) *Pelt. malacopis*, n.sp.

♂♀. 17-19 mm. Head, palpi, and thorax whitish-ochreous. Antennæ whitish, ciliations $3\frac{1}{2}$. Abdomen white. Legs greyish-ochreous sprinkled with white, posterior pair white. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; very pale yellowish-ochreous; markings deeper ochreous or light fuscous, very indistinct; costal edge in ♂ slenderly white from $\frac{1}{4}$ to $\frac{3}{4}$; a dot in disc at $\frac{2}{5}$, a second obliquely beyond it on fold (both sometimes imperceptible), and a third more distinct in disc at $\frac{3}{5}$; sometimes a small roundish spot above inner margin before anal angle; a faint cloudy angulated line from $\frac{3}{4}$ of costa to anal angle: cilia pale whitish-ochreous, becoming white towards anal angle. Hindwings ochreous-whitish, towards base whiter; cilia white.

Wallaroo, South Australia; Carnarvon, West Australia; in October and November, four specimens.

685. (271a.) *Pelt. balanota*, n.sp.

♂. 18 mm. Head, antennæ, and thorax pale greyish-ochreous, antennal ciliations 4. Palpi pale greyish-ochreous; base of second joint infuscated. Abdomen ochreous-whitish. Legs dark fuscous, ringed with whitish, posterior pair whitish. Forewings elongate, posteriorly dilated, costa gently arched, apex obtuse, hindmargin nearly straight, rather oblique; pale greyish-ochreous, with some fine scattered black scales; a blackish dot in disc at $\frac{1}{3}$, a second slightly beyond it on fold, and a third in disc at $\frac{2}{3}$; a roundish blackish spot touching third discal dot beneath and extending to near anal angle; an outwards-angulated series of irregular blackish dots from $\frac{2}{5}$ of costa to anal angle: cilia pale greyish-ochreous. Hindwings whitish, veins posteriorly with some grey scales; cilia ochreous-whitish.

Warragul, Victoria; one specimen (Coll. Lucas). Recalls *Compsotropha hemispila*, but is without the conspicuous hind-marginal dots of that species.

686. (272a.) *Pelt. amenena*, Meyr.

(Peltophora amenena, Meyr., Trans. N.Z. Inst. 1887, 78.)

Mountains of South Island, New Zealand.

The following is a tabulation of the 31 described species of *Peltophora* :—

| | |
|--|----------------------------|
| 1. Hindwings yellow or orange..... | 2. |
| Hindwings not yellow or orange..... | 7. |
| 2. Forewings with white or yellow blotches | 3. |
| Forewings without white or yellow blotches..... | 5. |
| 3. With nine whitish spots..... | 256. <i>marionella</i> . |
| Without nine whitish spots.... | 4. |
| 4. With three whitish fasciæ and two spots | 682. <i>arantis</i> . |
| With a yellow blotch..... | 264. <i>helias</i> . |
| 5. Forewings dark fuscous..... | 6. |
| Forewings whitish-ochreous..... | 269. <i>conjunctella</i> . |
| 6. With an indistinct whitish fascia..... | 683. <i>mesodesma</i> . |
| Without an indistinct whitish fascia..... | 263. <i>fulvia</i> . |
| 7. Forewings yellow or with yellow blotches | 8. |
| Forewings not yellow or with yellow blotches..... | 18. |
| 8. Thorax wholly yellow..... | 252. <i>coniortia</i> . |
| Thorax not wholly yellow..... | 9. |
| 9. Thorax partially yellow..... | 10. |
| Thorax wholly dark fuscous..... | 16. |
| 10. Forewings dark fuscous with yellow blotches..... | 11. |
| Forewings yellow with dark markings... | 13. |
| 11. With nine yellow blotches..... | 255. <i>gloriosella</i> . |
| With six or seven yellow blotches..... | 12. |
| 12. Cilia of forewings wholly blackish-grey... | 680. <i>melanocrossa</i> . |
| Cilia of forewings partly yellow..... | 254. <i>argutella</i> . |
| 13. With a dark costal streak..... | 675. <i>epitoxa</i> . |
| Without a dark costal streak..... | 14 |

14. With a white spot in postmedian fascia. 678. *calliophthalma*.
Without a white spot in postmedian
fascia..... 15.
15. With a dark subbasal fascia..... 676. *cremantis*.
Without a dark subbasal fascia..... 679. *amphitoxa*.
16. Forewings with basal yellow blotch
narrow, transverse..... 267. *psilopla*.
'Forewings with basal yellow blotch broad 17.
17. Basal blotch broadest on inner margin... 266. *basiplaga*.
Basal blotch broadest towards costa..... 265. *proximella*.
18. Forewings with white blotches 19.
Forewings without white blotches..... 22.
19. Costa towards base dark fuscous ... 260. *niphias*.
Costa towards base white 20.
20. White fascia beyond middle entire 21.
White fascia beyond middle not reaching
costa..... 257. *incomposita*.
21. Forewings with base yellowish-white.... 253. *atricollis*.
Forewings with base dark fuscous..... 261. *carphalea*.
22. Forewings ochreous - whitish or pale
whitish-ochreous..... 23.
Forewings not ochreous-whitish or pale
whitish-ochreous..... 26.
23. With defined dark fuscous transverse
markings..... 24.
Without defined dark fuscous transverse
markings..... 25.
24. Head orange..... 677. *mychias*.
Head white..... 681. *charaxias*.
25. With a conspicuous dark dot in disc
beyond middle..... 686. *amenenda*.
Without a conspicuous dark dot in disc
beyond middle..... 272. *ceratina*.
26. Hindwings whitish..... 27.
Hindwings grey 30.

27. Hindwings with dark marginal band... 262. *cryptsileuca*.
Hindwings without dark marginal band 28.
28. Forewings with discal dots black 29.
Forewings with discal dots ochreous..... 684. *malacopsis*.
29. With a small blackish spot above anal
angle 685. *balanota*.
Without a small blackish spot above anal
angle 271. *privatella*.
30. Forewings with three discal dots..... 270. *cataxera*.
Forewings without three discal dots..... 268. *glaphyropla*.

PROTOMACHA, Meyr.

687. (275a.) *Prot. ochrochalca*, n.sp.

♂♀. 16-18 mm. Head and thorax light ochreous. Palpi dark grey, above and towards base whitish. Antennæ pale grey. Abdomen whitish-grey-ochreous. Legs dark bronzy-grey, posterior pair ochreous-whitish. Forewings elongate, costa hardly arched, apex round-pointed, hindmargin nearly straight, very oblique; shining ochreous; costal edge hardly whitish towards middle; a minute dark fuscous dot in disc before middle, a second very obliquely before it on fold (both often absent), and a third more distinct in disc at $\frac{2}{3}$: cilia light shining ochreous. Hindwings grey; cilia whitish-grey, sometimes ochreous-tinged.

Albany, West Australia; in December, common. Closely allied to *P. chalcaapis*, but differing from both this and *P. consuetella* by the absence of the distinct white costal streak.

44.** ANTIOPALA, n.g.

Head smooth, sidetufts loosely spreading; tongue developed. Antennæ in ♂ whorled with long fine ciliations (5), basal joint rather stout, without pecten. Labial palpi very long, recurved, second joint thickened with dense scales, somewhat rough beneath, rather dilated towards apex, terminal joint shorter than second, slender, acute. Thorax smooth. Posterior tibiae clothed with long dense hairs above. Forewings with vein 1 furcate, 2 from

near angle, 7 and 8 stalked, 7 to hindmargin. Hindwings elongate-ovate, cilia almost 1; veins 3 and 4 from a point or somewhat remote at base, 6 and 7 parallel.

688. (278a.) *Ant. tephraea*, n.sp.

♂. 15-19 mm. Head, antennæ, thorax, and abdomen fuscous. Palpi rather dark fuscous sprinkled with whitish, apex of second joint whitish. Legs dark fuscous, apex of joints whitish, posterior tibiæ whitish-grey. Forewings elongate, costa gently arched, apex round-pointed, hindmargin sinuate, very oblique; fuscous, finely irrorated with fuscous-whitish; a short dark fuscous streak beneath costa at base; a small dark fuscous dot in disc at $\frac{2}{5}$, a second obliquely before it on fold, and a third in disc at $\frac{2}{3}$; sometimes a dark fuscous curved line from $\frac{5}{8}$ of costa to anal angle, acutely indented above middle, often entirely absent: cilia fuscous, basal half irrorated with fuscous-whitish. Hindwings grey; cilia whitish-fuscous.

Deloraine and Mount Wellington, Tasmania; in November and December, common.

SAROPLA, Meyr.

689. (280a.) *Sar. ancistrotis*, n.sp.

♂♀. 14-16 mm. Head white. Palpi white, second joint ochreous except apex. Antennæ grey. Thorax white, patagia ochreous. Abdomen ochreous-whitish. Legs dark fuscous, posterior pair ochreous-whitish. Forewings elongate, rather narrow, costa gently arched, apex acute, hindmargin faintly sinuate, extremely oblique; white; markings golden-ochreous; a rather broad straight streak from middle of base to costa at $\frac{4}{5}$; an equally broad rather irregular-edged streak along inner margin from base to anal angle; a rather narrow fascia near and parallel to hindmargin joining extremities of two streaks: cilia very pale greyish-ochreous, base golden-ochreous. Hindwings pale grey; cilia whitish-ochreous.

Geraldton, West Australia; in October and November, three specimens.

690. (280b.) *Sar. harpactis*, n.sp.

♂♀. 12-15 mm. Head white, centre of crown ochreous-tinged. Palpi white, second joint greyish-ochreous except apex. Antennæ pale grey. Thorax white, patagia golden-ochreous. Abdomen ochreous-whitish. Legs rather dark grey, posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex tolerably pointed, hindmargin faintly sinuate, very oblique; snow-white; markings golden-ochreous; a moderate straight streak from middle of base to costa at $\frac{3}{4}$; a moderate streak very near inner margin from base to anal angle, upper edge with a short projection before middle; a slender rather inwards-curved fascia from $\frac{3}{4}$ of costa to anal angle, connecting extremities of these streaks; a narrow submarginal fascia from costa before apex to close above anal angle but not quite reaching it: cilia very pale greyish-ochreous, base with white scales. Hindwings pale grey; cilia whitish-ochreous.

Northampton and Perth, West Australia; in October and November, seven specimens.

691. (283a.) *Sar. amydropis*, n.sp.

♂♀. 11-12 mm. Head, thorax, and abdomen whitish-grey. Palpi white, second joint grey except apex, terminal joint nearly as long as second. Antennæ grey. Legs grey, posterior pair grey-whitish. Forewings lanceolate; whitish-ochreous-grey or grey-whitish, somewhat sprinkled with darker: cilia whitish-ochreous-grey or whitish. Hindwings lanceolate, grey; cilia whitish or ochreous-whitish.

Geraldton and York, West Australia; in November, four specimens.

692. (283b.) *Sar. brachyota*, n.sp.

♂. 13 mm. Head grey-whitish. Palpi grey, above white, terminal joint very short, about $\frac{1}{4}$ of second. Antennæ, thorax, and abdomen rather light grey. Legs grey, posterior pair grey-whitish. Forewings lanceolate; pale grey: cilia grey-whitish. Hindwings lanceolate, pale grey; cilia grey-whitish.

Perth, West Australia; in October, one specimen. Very similar to the preceding, but immediately distinguished by the singularly short terminal joint of palpi.

PLEUROTA, Hb.

693. (283c.) *Pleur. semophanes*, n.sp.

♂♀. 19-22 mm. Head pale ochreous-yellow. Palpi dark fuscous, above yellowish-white, more broadly towards apex of second joint. Antennæ dark fuscous. Thorax dark fuscous, apex of patagia ochreous-yellow. Abdomen dark fuscous, apex yellowish. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, posteriorly rather dilated, costa slightly arched, apex round-pointed, hindmargin straight, rather strongly oblique; yellow-whitish, base ochreous-yellow; markings dark fuscous; a rather broad streak along costa from base to near apex, extremities pointed, lower margin with a short rounded projection before middle; a moderate streak along inner margin from near base to $\frac{3}{4}$, posteriorly pointed, with a rounded projection upwards in middle; a moderate fascia, rather narrowed upwards, from costal streak at $\frac{3}{8}$ to anal angle; a slender rather irregular-edged streak along hindmargin from apex to anal angle: cilia dark fuscous. Hindwings dark fuscous, towards anal angle rather broadly ochreous-yellow; cilia light ochreous-yellow, on costa and upper half of hindmargin fuscous.

York, West Australia; in October, four specimens. A strikingly distinct species.

694. (285a.) *Pleur. homalota*, n.sp.

♂: 18-21 mm., ♀ 16-17 mm. Head and palpi dark grey sprinkled with whitish. Antennæ dark grey. Thorax bronzy. Abdomen grey. Legs dark grey, posterior tibiae paler. Forewings elongate, posteriorly rather dilated, costa gently arched, apex round-pointed, hindmargin sinuate, oblique; bronzy, in ♀ somewhat sprinkled with grey-whitish; a faintly indicated darker dot in disc at $\frac{3}{8}$: cilia grey, slightly bronzy-tinged. Hindwings grey; cilia pale grey.

Perth, West Australia; in October, locally abundant.

695. (286a.) *Pleur. cnephaea*, n.sp.

♂. 19 mm. Head, antennæ, and thorax dark grey. Palpi dark grey, hairs of second joint grey-whitish above. Abdomen grey. Legs dark grey, posterior tibiæ pale grey. Forewings elongate, costa gently arched, apex round-pointed, hindmargin faintly sinuate, oblique; dark brownish-grey, with some scattered black scales tending to accumulate towards inner margin and on veins posteriorly; extreme costal edge whitish from $\frac{1}{4}$ to $\frac{4}{5}$: cilia dark grey. Hindwings grey; cilia pale grey.

Geraldton, West Australia; in November, one specimen. Nearly allied to *P. tephрина* (of which I have now three specimens), but easily recognised by the very much darker groundcolour, and absence of all whitish irroration.

696. (290a.) *Pleur. photodotis*, n.sp.

♂♀. 13-16 mm. Head light ochreous-yellow. Palpi dark fuscous, second joint with hairs of upper surface light ochreous-yellow. Antennæ dark grey. Thorax fuscous, patagia ochreous-yellow. Abdomen grey. Legs dark grey, posterior tibiæ light grey. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex round-pointed, hindmargin slightly sinuate, very oblique; ochreous-yellow; a narrow white streak along anterior half of costa; a white median line from near base, and a white line along fold from base, both terminated by first fascia; two moderate rather irregular parallel dark fuscous fasciæ, somewhat mixed with white, not reaching costa, first from beneath middle of costa to beyond middle of inner margin, margined posteriorly by a white spot above middle, second from beneath $\frac{2}{3}$ of costa to anal angle; an irregular dark fuscous line round apex and upper half of hindmargin, preceded by an interrupted white line: cilia ochreous-yellow, terminal half dark fuscous. Hindwings and cilia rather dark grey.

Bathurst (2700 feet), New South Wales; in November, five specimens.

697. (294a.) *Pleur. macroscia*, n.sp.

♂. 14-16 mm. Head whitish-ochreous. Palpi whitish-ochreous, second joint dark fuscous except hairs above, base and anterior edge of terminal joint dark fuscous. Antennæ grey. Thorax fuscous, with a whitish stripe on each side of back, patagia ochreous-yellowish. Abdomen grey. Legs grey, posterior pair suffused with whitish-yellowish. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex round-pointed, hindmargin sinuate, rather strongly oblique; very pale ochreous-yellowish; a very indistinct suffused white streak along costa from base to middle; a moderate rather dark brown subcostal streak from base of costa to costa again at $\frac{4}{5}$, posterior portion very suffused and indistinct, margined beneath by a white line from near base to middle, of which the extremity forms a hook downwards, touching dorsal streak; a moderate dark fuscous streak along inner margin from base to near anal angle, beyond middle triangularly dilated; a triangular patch, of which apex is in middle of disc and base extends along hindmargin from apex to near anal angle, irregularly suffused with dark fuscous about veins; an indistinct suffused white line from subcostal streak at $\frac{2}{3}$ to anal angle; a white mark beneath apex of subcostal streak; a white line along hindmargin and apical fifth of costa: cilia pale ochreous-yellowish, terminal half rather dark fuscous except at anal angle, tips yellow-whitish from beneath apex to below middle of hindmargin. Hindwings and cilia rather dark grey.

Glen Innes (3500 feet) and Bathurst (2700 feet), New South Wales; in November and December, common.

698. (289a.) *Pleur. hoplophanes*, n.sp.

♂. 14 mm. Head and palpi orange-ochreous. Antennæ grey. Thorax orange, towards centre grey. Abdomen and legs light ochreous. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin faintly sinuate, oblique; deep ochreous-orange; costa and inner margin light yellow-ochreous to

beyond middle; all veins dark grey, mixed with white, except towards costa: cilia orange, with two dark fuscous lines, interrupted by white dots below apex. Hindwings and cilia grey.

New South Wales(?); one specimen (Coll. Mathew).

699. (299a.) *Pleur. holoxesta*, n.sp.

♂♀. 14 mm. Head, thorax, and antennæ white. Palpi white, second joint with lower half and a subapical ring, terminal joint with anterior edge dark fuscous. Abdomen grey-whitish. Legs grey, posterior pair white. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, very oblique; glossy ochreous-white; extreme costal edge blackish at base: cilia pale whitish-ochreous. Hindwings in ♂ pale grey, in ♀ darker grey; cilia ochreous-whitish.

Glen Innes (4500 feet), New South Wales; in December, two specimens.

ATHEROPLA, Meyr.

I am now enabled to supplement the generic characters, formerly incomplete through the absence of the ♂, as follows: Sidetufts roughly spreading. Antennæ in ♂ with very long fine ciliations (7-8), basal joint moderate, with small pecten. Hindwings with cilia $\frac{4}{5}$ -1. This genus is therefore wrongly placed in the tabulation, and should be altered in accordance with the above characters.

700. (300a.) *Ather. psilopsis*, n.sp.

♂. 13-14 mm. Head and thorax pale ochreous-yellowish. Palpi pale ochreous-yellowish, second joint with a broad oblique dark fuscous band beneath apex. Antennæ yellow-whitish, annulated with dark fuscous. Abdomen light grey, anal tuft whitish-ochreous. Legs dark grey, apex of joints whitish, posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; light ochreous-yellowish, with a few dark fuscous scales towards hindmargin and apical half of costa; a black dot on base of costa, a second on inner margin near base, a third in disc at $\frac{1}{3}$, a fourth on fold

slightly beyond third, and two others transversely placed and near together in disc at $\frac{2}{3}$: cilia light ochreous-yellowish. Hindwings light grey; cilia whitish-grey, slightly yellowish-tinged.

Mount Kosciusko (6000 feet), New South Wales; in January, two specimens.

701. (300b.) *Ather. decaspila*, n.sp.

♂. 14-16 mm. Head and thorax whitish-ochreous. Palpi pale whitish-ochreous, second joint dark fuscous except base and apex, terminal joint dark fuscous on anterior edge towards apex. Antennæ whitish-ochreous, annulated with dark fuscous. Abdomen pale grey. Legs grey, apex of joints ochreous-whitish, posterior pair ochreous-grey-whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; whitish-ochreous, irregularly sprinkled with fuscous; costal edge slenderly blackish near base; a black dot on inner margin near base, a second in disc at $\frac{1}{6}$, a third in disc at $\frac{1}{3}$, a fourth on fold slightly beyond third, and a fifth, larger and indistinctly double, in disc at $\frac{2}{3}$; the fuscous irroration forms a darker shade from apex to anal angle near hindmargin: cilia pale whitish-ochreous, towards anal angle whitish-grey, with a basal series of cloudy dark fuscous spots along hindmargin. Hindwings and cilia light grey.

Bathurst (2700 feet), New South Wales; in November, common.

ARISTEIS, Meyr.

702. (303a.) *Arist. anomodes*, n.sp.

♂♀. 17-20 mm. Head, palpi, and thorax white irrorated with ochreous. Antennæ whitish. Abdomen ochreous-whitish, anterior coxæ and femora infuscated. Forewings elongate, costa moderately arched, apex pointed, hindmargin nearly straight, very oblique; ochreous-whitish, thinly and finely sprinkled with dark fuscous; a dark fuscous dot in disc before middle, a second beneath it on fold, and a third in disc at $\frac{2}{3}$; a row of subquadrate fuscous dots along hindmargin and sometimes apical fourth of costa: cilia

ochreous-whitish, posteriorly irrorated with grey. Hindwings and cilia ochreous-grey-whitish.

Sydney, New South Wales; in October, four specimens. This insect has no specific resemblance whatever with *A. chrysoteuches*, but agrees with it accurately in essential structure, and I am obliged to include them together; possibly some connecting forms may hereafter be discovered.

COESYRA, Meyr.

703. (311a.) *Coes. thermistis*, n.sp.

♂♀. 13-15 mm. Head ochreous-yellow. Palpi light yellowish, second joint externally suffused with dark fuscous except at apex. Antennæ yellow-whitish, annulated with dark fuscous. Thorax ochreous-yellow, patagia and posterior extremity dark fuscous. Abdomen grey, anal tuft ochreous-yellowish. Legs dark fuscous, apex of joints pale yellowish, posterior pair ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; ochreous-yellow, sprinkled throughout with fuscous, especially on costa towards base; markings rather dark ochreous-fuscous, slightly purplish-tinged; a narrow basal fascia; a dot in disc at $\frac{2}{3}$, a second nearly beneath it on fold, a third in disc at $\frac{3}{4}$, and a fourth on inner margin at $\frac{3}{4}$; a moderate straight fascia from $\frac{3}{4}$ of costa to anal angle, narrowed at extremities, anterior edge touching third discal dot; an irregular streak along hindmargin from apex to below middle: cilia light ochreous-yellow, basal half mixed with fuscous, at apex and anal angle with rather dark fuscous bars. Hindwings and cilia dark grey.

Duaringa, Queensland; three specimens received from Mr. G. Barnard. Allied to *C. triptycha*.

704. (311b.) *Coes. leptospila*, n.sp.

♂. 12-13 mm. Head pale ochreous-yellowish. Palpi whitish-yellowish, lower half of second joint dark fuscous. Antennæ

dark fuscous. Thorax fuscous, anterior and posterior margins sometimes obscurely yellowish. Abdomen whitish-ochreous. Legs grey, posterior pair whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; light ochreous-yellow; base of costa suffused with fuscous; a dark fuscous dot in disc at $\frac{2}{3}$, a second beneath it on fold, and a third in disc at $\frac{3}{4}$; a cloudy fuscous streak from third discal dot to anal angle, and sometimes indications of a similar but less complete streak from third discal dot to costa before apex; a slender cloudy fuscous streak along hindmargin from apex to anal angle: cilia pale ochreous-yellowish. Hindwings light grey; cilia whitish-ochreous.

Duarina, Queensland; five specimens received from Mr. G. Barnard.

705. (311c.) *Coes. phaeocosma*, n.sp.

♂. 13 mm. Head light ochreous-yellow. Palpi light yellow, basal third of second joint dark fuscous. Antennæ dark fuscous, ringed with whitish-ochreous. Thorax light ochreous-yellow, shoulders dark fuscous. Abdomen whitish-ochreous, sprinkled with grey. Legs dark fuscous, ringed with whitish-ochreous (posterior pair broken). Forewings elongate, costa gently arched, apex obtuse, hindmargin obliquely rounded; light ochreous-yellow; a broad dark fuscous streak along basal third of costa, posteriorly suffused; a dark fuscous dot in disc at $\frac{2}{3}$, and a second obliquely before it on fold; a rather narrow dark brown fascia, somewhat inwards-curved, from costa beyond middle to inner margin before anal angle; a rather broad suffusion of scattered dark fuscous scales along hindmargin from apex to anal angle, where it meets the fascia: cilia ochreous-yellow, with an ill-defined fuscous line, and base mixed with fuscous. Hindwings and cilia grey.

Fernshaw, Victoria; one specimen (Coll. Lucas).

706. (312a.) *Coes. stereosema*, n.sp.

♂♀. 14-17 mm. Head deep ochreous-yellow. Palpi yellow-whitish, second joint except apex, and anterior edge of terminal

joint dark fuscous. Antennæ and abdomen dark fuscous. Thorax dark purple-fuscous. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique; deep ochreous-yellow; base of costa and base of inner margin dark purple-fuscous, uniting; a moderate nearly straight dark purplish-fuscous fascia from $\frac{3}{4}$ of costa to anal angle, slightly curved near costa: cilia dark purplish-fuscous. Hindwings and cilia dark fuscous.

Bathurst (2500 feet), New South Wales; in November and March, five specimens.

707. (313a.) *Coes. phaeozona*, n.sp.

♀. 18 mm. Head and thorax yellow. Palpi yellow, base fuscous. Antennæ grey. Abdomen grey, segmental margins pale yellowish. Legs dark grey, ringed with whitish-yellowish, posterior tibiæ whitish-yellowish. Forewings elongate, costa rather strongly arched, apex round-pointed, hindmargin obliquely rounded; deep yellow; a narrow irregular slightly inwards-curved fuscous fascia from $\frac{2}{3}$ of costa to before anal angle: cilia yellow, beneath anal angle grey. Hindwings and cilia grey.

New South Wales; one specimen (Coll. Australian Museum).

708. (314a.) *Coes. crocinastis*, n.sp.

♀. 16-17 mm. Head, palpi, antennæ, and abdomen light ochreous-yellow. Thorax fuscous, anterior and posterior margins light ochreous-yellow. Legs dark fuscous, apex of joints yellowish, posterior pair ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin faintly sinuate, rather strongly oblique; light ochreous-yellow; a rather thick somewhat irregular dark fuscous erect streak from inner margin immediately before anal angle, apex slightly bent posteriorly, not reaching costa; a slender cloudy fuscous streak along upper half of hindmargin: cilia light ochreous-yellowish, slightly mixed with grey, suffusedly barred with grey at apex and anal angle. Hindwings

light ochreous-yellow, costal half suffused with grey except on hindmargin; cilia light ochreous-yellow.

Carnarvon, West Australia; in October, two specimens. Closely allied to the following, from which it is best distinguished by the ochreous-yellow apex of hindwings; but it is not improbable that further material might show both to be geographical forms of the same species.

709. (314b.) *Coes. comoxantha*, n.sp.

♂♀. 15-19 mm. Head ochreous-orange. Palpi ochreous-yellow, second joint sometimes mostly suffused with dark fuscous, anterior edge of terminal joint dark fuscous. Antennæ and thorax dark fuscous. Abdomen ochreous-yellow, base grey. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin faintly sinuate, rather strongly oblique; ochreous-yellow; base of costa and base of inner margin dark fuscous, uniting, in ♀ very little marked; a rather irregular narrow dark fuscous erect fascia from inner margin immediately before anal angle, near costa abruptly bent outwards and terminating on costa near apex, upper portion in ♀ sometimes nearly obsolete; a narrow dark fuscous streak along hindmargin from apex to near anal angle: cilia dark fuscous, in ♀ mixed with ochreous-yellowish between apex and anal angle. Hindwings dark fuscous; a deep yellow blotch on anal angle, extending to middle of hindmargin, and about half across wing; cilia light ochreous-yellow, on upper half of hindmargin suffused with grey.

Geraldton, West Australia; in November, common.

710. (321a.) *Coes. menodora*, n.sp.

♀. 14 mm. Head yellow. Palpi yellow-whitish, in front dark fuscous. Antennæ grey, obscurely ringed with paler. Thorax light yellow, anterior margin rather broadly dark fuscous. Abdomen whitish-yellowish, base greyish. Legs dark grey, posterior pair whitish-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; light yellow; a moderate inwards-curved rather dark fuscous fascia, anteriorly

blackish-edged, from costa immediately before apex to inner margin immediately before anal angle, much attenuated towards costa; an irregular dark fuscous line along upper half of hindmargin: cilia fuscous. Hindwings rather dark grey; cilia grey.

Geraldton, West Australia; in November, one specimen.

711. (336a.) *Coes. asthenopsis*, n.sp.

♂♀. 14-16 mm. Head, palpi, antennæ, thorax, abdomen, and legs very pale ochreous-yellowish; base of palpi, and a curved transverse band of thorax light fuscous; anterior legs dark fuscous, middle legs fuscous-tinged. Forewings elongate, costa gently arched, apex round-pointed, hindmargin rounded, rather strongly oblique; pale dull ochreous-yellowish; a subtriangular cloudy light fuscous mark on anal angle, reaching half across wing; apex fuscous-tinged; sometimes a faint minute fuscous dot in disc at $\frac{2}{3}$, and another beneath it on fold: cilia whitish-yellowish, on anal angle brownish-tinged. Hindwings grey; cilia pale grey.

Carnarvon, West Australia; in October, four specimens.

712. (340a.) *Coes. noserodes*, n.sp.

♂. 15 mm. Head and thorax pale whitish-ochreous. Palpi whitish, second joint dark fuscous except apex. Antennæ fuscous. Abdomen ochreous-grey-whitish. Legs dark fuscous, posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; whitish-ochreous; markings dark fuscous; a narrow basal fascia; a dot in disc at $\frac{1}{3}$, a second rather obliquely beyond it on fold, a third above middle, and two confluent into a subrescendent spot in disc at $\frac{2}{3}$; a small cloudy spot on costa beyond middle; some scattered dark fuscous scales beyond discal spot and above anal angle; a short cloudy inwardly oblique streak from costa near apex, emitting from its apex a curved series of subconfluent dots to anal angle:

cilia whitish-ochreous, with basal and median series of alternating cloudy grey spots. Hindwings pale grey, suffused with whitish-ochreous; cilia whitish-ochreous.

Warragul, Victoria; one specimen (Coll. Lucas).

713. (342a.) *Coes. paraderces*, n.sp.

♀. 17 mm. Head, palpi, and antennæ whitish-ochreous. Thorax dark fuscous. Abdomen grey. Legs whitish-ochreous. Forewings elongate, costa moderately arched, apex rounded, hindmargin rather obliquely rounded; whitish-ochreous, yellow-tinged; markings dark fuscous; a narrow irregular fascia from costa at $\frac{2}{3}$ to beyond middle of inner margin, considerably dilated along costa, and a somewhat broader irregularly outwards-curved fascia from $\frac{3}{8}$ of costa to inner margin before anal angle, coalescing beneath to form a rather large dorsal blotch: cilia fuscous. Hindwings fuscous, base paler; cilia light fuscous.

New South Wales (?); one specimen (Coll. Mathew). Specific affinity doubtful.

714. (342b.) *Coes. hemiphragma*, n.sp.

♂♀. 13-17 mm. Head white. Palpi white, lower $\frac{2}{3}$ of second joint dark fuscous. Antennæ whitish, obscurely ringed with pale fuscous. Thorax white, patagia and posterior extremity rather dark fuscous. Abdomen whitish-ochreous. Legs dark fuscous, middle pair suffusedly ringed with ochreous-whitish, posterior pair ochreous-whitish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin nearly straight, oblique; white, more or less sprinkled with ochreous-brown, except on basal third; a dark fuscous streak along anterior half of costa, posteriorly pointed and suffused; base of inner margin dark fuscous; two narrow irregular ochreous-brown fasciæ, often partially interrupted or ill-defined; first from $\frac{3}{8}$ of costa to middle of inner margin, second inwards-curved, from $\frac{4}{8}$ of costa to anal angle; a darker dot in disc at $\frac{2}{3}$, a second beneath it on fold, and a third in disc at $\frac{3}{8}$, sometimes perceptible but usually absorbed in fasciæ; a narrow

irregular dark fuscous streak along upper half of hindmargin : cilia pale ochreous-yellowish, more or less mixed with fuscous beneath apex and on anal angle. Hindwings grey ; cilia whitish-ochreous, in ♀ with a cloudy greyish line.

Toowoomba (1600 feet), Queensland ; Sydney, New South Wales ; in November and December, five specimens, frequenting dense swampy bush.

715. (343a.) *Coes. melanoscia*, n.sp.

♂. 12-14 mm. Head ochreous-white. Palpi ochreous-white, base dark fuscous. Antennæ dark fuscous. Thorax white, patagia dark fuscous. Abdomen whitish. Legs white, anterior and middle femora and upper surface of tibiæ blackish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, very oblique ; white ; markings blackish ; a streak along basal third of costa, posteriorly much suffused ; a rather broad somewhat irregular streak along fold from base to anal angle, posteriorly more or less suffused above ; a dot in disc at $\frac{2}{3}$, and a second at $\frac{2}{3}$; sometimes a small cloudy spot on costa at $\frac{2}{3}$; a moderate cloudy streak from costa near apex parallel to hindmargin, reaching half across wing, sometimes continued so as to be almost confluent with submedian streak : cilia white, somewhat mixed irregularly with blackish. Hindwings light grey ; cilia whitish.

Albany, West Australia ; in September, five specimens.

716. (344a.) *Coes. innumera*, n.sp.

♀. 15 mm. Head ochreous-whitish, with a blackish band across crown. Palpi whitish, second joint rather dark fuscous except apex. Antennæ whitish-fuscous. Thorax ochreous-whitish. Abdomen whitish-ochreous. Legs whitish-ochreous, anterior pair infuscated. Forewings elongate, costa moderately arched, apex almost acute, hindmargin very obliquely rounded ; whitish, regularly strigulated throughout with very fine transverse dark ochreous-fuscous striæ ; markings dark ochreous-fuscous ; a transverse

suffusion from inner margin near base, extending half across wing; a rather large round dot in disc at $\frac{2}{3}$, and a second beneath it on fold; an irregular transverse spot in disc at $\frac{2}{3}$, nearly reaching both margins, containing a somewhat metallic grey central transverse mark; a series of dots from middle of costa, continued very near costa and hindmargin to inner margin before anal angle: cilia whitish-ochreous. Hindwings grey; cilia whitish-ochreous.

Duaringa, Queensland; one specimen received from Mr. G. Barnard. The ♂ of this peculiar species being unknown, it may not be justly referable here; specifically it may be immediately distinguished from all other known species of the whole family by the peculiar transverse striation, and the blackish band of the head is also a special character.

717. (344b.) *Coes. psilostola*, n.sp.

♂♀. 11-13 mm. Head fuscous-whitish, sometimes mixed with dark fuscous on crown. Palpi white, second joint with basal half and a subapical ring, terminal joint with basal and suprmedian bands and apex dark fuscous. Antennæ whitish, annulated with black. Thorax whitish-ochreous, brownish-tinged. Abdomen ochreous-grey-whitish. Legs dark fuscous, ringed with whitish, posterior pair whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; ochreous-whitish, more or less suffused with very pale brown; markings blackish; a narrow irregular subbasal fascia, sometimes interrupted; a black dot in disc at $\frac{1}{3}$, a second rather obliquely beyond it on fold, and a third in disc at $\frac{2}{3}$; a subtriangular spot on costa touching first dot, another on inner margin touching second, a third rather larger on costa above third dot, a fourth on inner margin touching third dot, and a fifth on costa before apex, connected by a cloudy shade with third dot: cilia whitish-ochreous, with a few blackish scales towards base. Hindwings grey, slightly bronzy-tinged; cilia light grey.

Sydney, New South Wales; from October to December, three specimens.

718. (344c.) *Coes. dictyodes*, n.sp.

♂. 14 mm. Head fuscous, sidetufts and back of crown white. Palpi, antennæ, and thorax rather dark fuscous. Abdomen whitish-grey, anal tuft ochreous-tinged. Legs dark fuscous, posterior pair grey-whitish. Forewings elongate, rather narrow, costa slightly arched, apex round-pointed, hindmargin extremely obliquely rounded; fuscous; an obscure whitish streak along costa from base to $\frac{3}{4}$, interrupted about middle; a dark fuscous dot in disc at $\frac{2}{5}$, a second hardly beyond it on fold, and a third in disc at $\frac{3}{5}$; a white streak along fold from near base to anal angle, interrupted by second dot; a white streak from first discal dot to middle of hindmargin, touching submedian streak at its origin, interrupted by third dot, posteriorly becoming suffused and indistinct; traces of a curved darker line near hindmargin: cilia whitish-fuscous. Hindwings and cilia whitish-fuscous.

Mount Kosciusko (7200 feet), New South Wales; one specimen in January, taken amongst the rocks on the summit of the highest peak. I conjecture that the larva will be found to be a lichen-feeder.

BRACHYNEMATA, Meyr.

719. (348a.) *Brach. amblyteles*, n.sp.

♂. 13-14 mm. Head white. Palpi white, second joint ochreous-fuscous except apex. Antennæ whitish. Thorax white, shoulders narrowly ochreous-fuscous. Abdomen pale whitish-ochreous. Legs fuscous, posterior pair pale whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; white; markings brownish-ochreous; a streak along basal fourth of costa, with scattered scales indicating its continuation to $\frac{3}{5}$; a rather narrow straight fascia from beneath middle of costa to near inner margin before middle; a moderate fascia from costa before apex to anal angle, its anterior edge forming a sharp angulation which touches

lower extremity of a transverse-linear dot in disc at $\frac{2}{3}$, its posterior edge nearly straight; a row of irregular subconfluent ochreous-fusca dots along hindmargin: cilia white, with some ochreous-brown scales at anal angle. Hindwings light grey, apex obscurely whitish-ochreous; cilia pale whitish-ochreous.

Duaringa, Queensland; three specimens received from Mr. G. Barnard.

OCYSTOLA, Meyr.

720. (361a.) *Ocyst. pyrochrysa*, n.sp.

♂. 18 mm. Head, antennæ, thorax, abdomen, and legs dark purple-fusca; face and palpi yellow-ochreous; terminal joint of palpi $\frac{1}{4}$ of second. Forewings elongate, costa slightly sinuate, apex round-pointed, hindmargin nearly straight, oblique; deep bright yellow; base narrowly purple-blackish; a very broad dark fuscous-purple hindmarginal band, bounded by an inwards-curved blackish streak from $\frac{2}{3}$ of costa to $\frac{2}{3}$ of inner margin: cilia dark purple-fusca. Hindwings ovate-lanceolate, round-pointed, 3 and 4 almost from a point; bright orange; a moderate purple-blackish hindmarginal border, broadest at apex, rather projecting in middle, attenuated to anal angle; cilia blackish.

Sydney, New South Wales; one specimen bred from a larva feeding in decayed wood (Coll. Mathew).

721. (368a.) *Ocyst. callixantha*, n.sp.

♂. 13-14 mm. Head light ochreous-yellowish. Palpi whitish-yellowish, terminal joint $\frac{2}{3}$. Antennæ whitish, ciliations 5. Thorax clear yellow. Abdomen pale whitish-ochreous. Legs dark fuscous, apex of joints whitish, posterior pair pale whitish-ochreous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin almost straight, very oblique; bright clear yellow; markings fuscous, more or less partially pale ferruginous on margins; a streak along basal half of costa, sometimes absent; a round dot in disc at $\frac{1}{3}$, a second obliquely beyond it on fold, and a third in disc at $\frac{2}{3}$, first two sometimes obsolete; sometimes an

irregular streak from third dot to anal angle; a narrow hindmarginal fascia from apex to anal angle: cilia yellow, at anal angle light brownish-ferruginous. Hindwings elongate-ovate, 3 and 4 from a point; very pale grey, more or less suffused with pale whitish-ochreous; cilia pale whitish-ochreous.

Fernshaw and Warragul, Victoria; in December, three specimens. A variable species, but even the least-marked forms seem separable from *O. malacella* by the dark hindmarginal streak; the strongly-marked form is conspicuously distinct.

722. (374a.) *Ocyst. dystechna*, n.sp.

♂♀. 13-14 mm. Head, palpi, and thorax fuscous, sprinkled with ochreous-whitish, terminal joint of palpi $\frac{3}{4}$. Antennæ fuscous, ciliations $2\frac{1}{2}$. Abdomen ochreous-grey-whitish. Legs dark fuscous, apex of joints and posterior pair ochreous-whitish. Forewings elongate, rather narrow, costa moderately arched, apex acute, hindmargin extremely obliquely rounded; pale fuscous irrorated with darker; a dark fuscous dot in disc at $\frac{2}{3}$, a second beneath it on fold, and a third in disc at $\frac{2}{3}$: cilia whitish-fuscous, towards base sprinkled with darker fuscous. Hindwings broad-lanceolate, 3 and 4 from a point; whitish-grey; cilia ochreous-grey-whitish.

Sydney and Blackheath (3500 feet), New South Wales; from June to August, and on the mountains in November, six specimens.

723. (379a.) *Ocyst. episcota*, n.sp.

♂♀. 13-15 mm. Head and palpi in ♂ grey, in ♀ white, terminal joint almost 1. Antennæ dark grey, ciliations 5. Thorax dark brownish-grey, in ♀ whitish towards middle anteriorly. Abdomen fuscous. Legs rather dark fuscous, posterior pale ochreous-yellowish. Forewings elongate, rather narrow, costa gently arched, apex acutely produced, hindmargin extremely oblique, continuous with inner margin; dark brown; markings ill-defined, in ♂ light grey, in ♀ white; a blotch covering basal fourth; a rather narrow fascia from beyond middle of costa to beyond middle of inner

margin, connected by a light grey streak on inner margin with basal blotch; a small subtriangular spot on anal angle; some white or pale grey scales towards upper part of hindmargin: cilia fuscous. Hindwings broad-lanceolate, 3 and 4 from a point; fulvous; cilia fulvous.

Sydney and Bathurst (2300 feet), New South Wales; in December, three specimens.

724. (391a.) *Ocyst. holonota*, n.sp.

♂♀. 16-20 mm. Head pale ochreous-yellowish or white. Palpi long, white, apex of terminal joint, and second joint except apex dark grey, terminal joint almost 1. Antennæ grey, ciliations 5. Thorax dark fuscous, apex of patagia white. Abdomen whitish-ochreous. Legs dark fuscous, posterior pair whitish-ochreous. Forewings elongate, rather narrow, costa gently arched, apex acutely produced, hindmargin slightly sinuate, extremely oblique; white, sometimes ochreous-tinged; markings dark fuscous; costal edge more or less dark fuscous on anterior half; a moderate irregular streak along inner margin from base to anal angle, attenuated at base; a narrow rather inwards-curved fascia from $\frac{2}{3}$ of costa to middle of inner margin; an erect triangular spot, containing a cloudy white central dot, on inner margin before anal angle, reaching more than half across wing; a narrow irregular-edged fascia along hindmargin from apex to anal angle: cilia white, above apex and on anal angle dark fuscous. Hindwings ovate-lanceolate, 3 and 4 from a point; light grey; cilia whitish-ochreous, greyish-tinged.

Perth and York, West Australia; in October, three specimens. Closely allied to *O. paulinella*, from which it is most easily distinguished by the white apex of patagia.

HAPLODYTA, Meyr.

725. (398a.) *Hxpl. torosema*, n.sp.

♂♀. 16-18 mm. Head orange. Palpi dark fuscous, above orange-yellow. Antennæ dark fuscous. Thorax dark fuscous,

posterior margin orange-yellow. Abdomen ochreous-yellow, basal half dark grey. Legs dark grey, posterior pair ochreous-yellow. Forewings elongate, rather narrow, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; deep ochreous-yellow; base of costa and of inner margin slenderly dark fuscous; an erect rather irregular wedge-shaped dark fuscous spot on inner margin before anal angle, reaching more than half across wing; a moderate dark fuscous hindmarginal fascia, narrowed almost to a point at anal angle, where it touches preceding spot: cilia dark fuscous, base sometimes yellowish towards middle of hindmargin. Hindwings dark grey; cilia pale ochreous-yellowish.

Geraldton, West Australia; in November, six specimens. Recognisable from the two following especially by the wholly yellow cilia of hindwings, and bright colouring.

726. (398b.) *Hapl. perinyctis*, n.sp.

♂♀. 15-16 mm. Head orange-yellow. Palpi dark fuscous, above light yellowish. Antennæ pale fuscous. Thorax ochreous-yellow, anterior half more or less dark grey. Abdomen ochreous-yellowish, basal half dark grey, sometimes mixed with grey posteriorly. Legs dark grey, posterior pair ochreous-yellowish. Forewings elongate, rather narrow, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; ochreous-yellow, sometimes much mixed with grey; sometimes a cloudy fuscous streak beneath costa from base to $1\frac{1}{3}$; an erect wedge-shaped dark fuscous spot on anal angle, reaching more than half across wing; a cloudy subquadrate dark fuscous apical spot: cilia dark fuscous, sometimes more or less suffused with ochreous-yellowish on upper half of hindmargin. Hindwings dark fuscous; cilia rather dark fuscous, round apex sometimes mixed with light yellowish.

Perth, West Australia; in November, three specimens. More obscure than the other two species; best distinguished from *H. torosema* by the dark fuscous cilia of hindwings, from *H. amphidoxa* by the partially yellow thorax.

727. (398c.) *Hapl. amphidoxa*, n.sp.

♂♀. 13-17 mm. Head orange. Palpi dark fuscous, above yellowish. Antennæ dark fuscous. Thorax rather dark purplish-fuscous. Abdomen light ochreous-yellowish, towards base grey. Legs dark fuscous, posterior pair ochreous-yellowish. Forewings elongate, rather narrow, costa gently arched, apex round-pointed, hindmargin extremely obliquely rounded; dull yellowish-ochreous; base of costa and of inner margin suffusedly fuscous; a moderately broad fuscous hindmarginal fascia from apex to anal angle, narrowed to a point beneath, anterior edge with a small abrupt indentation about middle: cilia rather dark fuscous. Hindwings dark fuscous; cilia light ochreous-yellowish, round apex and upper half of hindmargin more or less suffused with fuscous.

Geraldton, West Australia; in November, eight specimens. Separable by the wholly dark thorax, dull colouring, and anal marking not developed into a separate prolonged spot.

MACHAERITIS, Meyr.

728. (406a.) *Mach. doxastica*, n.sp.

♂. 10 mm. Head and thorax bronzy-fuscous, sprinkled with grey-whitish. Palpi dark bronzy-fuscous, above white. Antennæ dark fuscous. Abdomen grey. Legs dark grey, apex of joints whitish, posterior tibiae pale grey. Forewings lanceolate; bronzy-fuscous, suffused with yellow-ochreous in disc; a black dot in disc before middle, a second very obliquely before it on fold, and a third in disc at $\frac{2}{3}$; an indistinct transverse suffusion of white scales at $\frac{1}{4}$; a more distinct white suffusion forming a fascia in middle; a suffused white rather inwards-curved streak from costa before apex to anal angle, narrowed beneath, followed by some black scales, and preceded on anal angle by a cloudy suffusion of black scales: cilia fuscous, with an ill-defined blackish line, on costa white above streak. Hindwings and cilia grey.

Albany, West Australia; in December, two specimens.

729. (406b.) *Mach. nephelora*, n.sp.

♂♀. 10-12 mm. Head, thorax, and abdomen fuscous. Palpi dark fuscous, above mixed with whitish. Antennæ and legs dark fuscous, hairs of posterior tibiæ grey-whitish. Forewings lanceolate; fuscous, sometimes partially ochreous-tinged, irregularly irrorated with whitish; a cloudy white spot on costa at $\frac{2}{3}$, and another on anal angle; sometimes an obscure darker dot on fold at $\frac{1}{3}$, and another in disc at $\frac{2}{3}$: cilia grey, somewhat mixed with white, base clothed with white scales mixed with light ochreous, sometimes with a dark fuscous dot opposite apex. Hindwings grey; cilia grey, base suffused with whitish-ochreous, especially on costa.

York, West Australia; in October; six specimens.

730. (406c.) *Mach. homalopsis*, n.sp.

♂. 10-11 mm. Head and palpi bronzy-grey. Antennæ dark grey. Thorax shining bronzy. Abdomen grey. Legs dark grey, posterior tibiæ paler. Forewings lanceolate; shining bronzy: cilia grey. Hindwings and cilia grey.

York, West Australia; in November, two specimens.

731. (410a.) *Mach. synora*, n.sp.

♂♀. 14-16 mm. Head grey irrorated with ochreous-whitish. Palpi grey, above whitish, second joint more dilated and loosely scaled beneath than in other species. Antennæ grey. Thorax light greyish-ochreous. Abdomen light grey. Legs dark grey, posterior pair ochreous-grey-whitish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, very oblique; glossy pale greyish-ochreous; a minute black dot in disc before middle, a second very obliquely before it on fold, and a third more distinct in disc at $\frac{2}{3}$; rarely indications of two or three black dots on hindmargin towards middle and on anal angle; cilia pale greyish-ochreous. Hindwings rather light grey; cilia ochreous-grey-whitish.

Perth, West Australia; in October, seven specimens. Although an inconspicuous species, it is readily separated from the others by the different form of wing; the palpi are also somewhat different, and I am not sure that it is justly included here.

SEMIICOSMA, Meyr.

732. (412a.) *Sem. mystis*, Meyr.

(*Semiocosma mystis*, Meyr., Trans. N. Z. Inst. 1887, 79.)

Nelson to Dunedin, New Zealand.

733. (415a.) *Sem. apodoxa*, Meyr.

(*Semiocosma apodoxa*, Meyr., Trans. N. Z. Inst. 1887, 79.)

Wellington, New Zealand.

734. (415b.) *Sem. platyptera*, Meyr.

(*Semiocosma platyptera*, Meyr., Trans. N. Z. Inst. 1887, 80.)

Wellington, New Zealand.

62.* PROTEROMICTA, n.g.

Head smooth, sidetufts appressed; tongue developed. Antennæ in ♂ moderately ciliated (1), basal joint moderate, with strong pecten. Labial palpi moderate, recurved, second joint loosely scaled beneath, terminal joint about half second, moderate, acute. Thorax smooth. Posterior tibiæ clothed with long dense hairs above. Forewings with vein 1 furcate, 2 from near angle, 7 and 8 stalked, 7 to costa. Hindwings elongate-ovate, cilia $\frac{4}{5}$; veins 3 and 4 tolerably remote at origin, 6 and 7 parallel.

Differs from *Oecophora* only by the separation of veins 3 and 4 of hindwings, and is perhaps a reversionary development from it, yet the affinity is not quite clear.

735. (418a.) *Prot. crymorrhoea*, n.sp.

♂. 22 mm. Head light greyish-ochreous. Palpi whitish, second joint dark fuscous except above. Antennæ dark fuscous. Thorax

greyish-ochreous, posterior extremity whitish. Abdomen pale greyish, anal tuft whitish-ochreous. Legs dark fuscous, posterior pair whitish-grey-ochreous. Forewings elongate, costa slightly arched, apex subacute, hindmargin hardly rounded, extremely oblique; rather light greyish-ochreous; a moderate straight whitish streak above middle from base to hindmargin below apex; costal space above this fuscous, paler towards apex, darker towards base: cilia light ochreous-greyish, somewhat whitish beneath apex. Hindwings grey; cilia pale ochreous-greyish.

Mount Wellington (3000 feet), Tasmania; Port Lincoln, South Australia; in November and December, two specimens.

GYMNOBATHRA, Meyr.

736. (425a.) *Gymn. omphalota*, Meyr.

(*Gymnobathra omphalota*, Meyr., Trans. N. Z. Inst. 1887, 81.)
Christchurch to Lake Wakatipu, New Zealand.

737. (428a.) *Gymn. habropis*, Meyr.

(*Gymnobathra habropis*, Meyr., Trans. N. Z. Inst. 1887, 80.)
Nelson, New Zealand.

64*. GUESTIA, n.g.

Head smooth, sidetufts loose; tongue developed. Antennæ in ♂ moderately ciliated (1), basal joint moderately elongate, with pecten. Labial palpi long, recurved, second joint with appressed scales, somewhat loose beneath, terminal joint nearly as long as second, slender, acute. Thorax smooth. Posterior tibiæ clothed with long hairs above. Forewings with vein 1 furcate, 2 and 3 rising on a curved stalk out of 4 near origin, 7 and 8 stalked, 7 to costa. Hindwings elongate-ovate, cilia $\frac{2}{3}$; veins 3 and 4 from a point, 6 and 7 parallel.

Differs from *Oecophora* only by the singular and exceptional structure of veins 2-4 of forewings. The genus is constituted for

the reception of *uniformis*, Meyr., (434), previously referred to *Oecophora*. I had overlooked the peculiar neural character in my specimen (it is not so conspicuous as might be supposed), and am indebted to my valued correspondent, Mr. E. Guest, of Balhannah, for calling my attention to it; and I have so far departed from my usual practice as to name the genus in grateful recognition of his acumen, and of the generous assistance which I have invariably received from him.

OECOPHORA, Z.

738. (442a.) *Oec. cosmanthes*, n.sp.

♂♀. 14-18 mm. Head orange. Palpi ochreous-yellow, base dark fuscous. Antennæ dark fuscous. Thorax ochreous-yellow, anterior margin rather broadly dark fuscous. Abdomen light ochreous-yellow. Legs dark grey, posterior pair ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, very oblique; ochreous-yellow; markings dark fuscous, slightly purplish-tinged; a narrow straight rather oblique fascia close to base; a dot in disc at $\frac{2}{3}$ (rarely absent), and a second beneath it on fold, rarely united into a transverse mark; a rather irregular narrow inwards-curved fascia from $\frac{2}{3}$ of costa to anal angle; a suboblong spot on upper half of hindmargin, continued as an irregular line along lower half: cilia rather dark grey, rather broadly suffused with ochreous-yellow beneath apex. Hindwings grey; cilia light ochreous-yellowish, tinged with grey at apex.

Geraldton, West Australia; in October and November, common. This and the two following species are closely allied to one another, and to *Oe. sulfurea*. This species differs from the other three by the absence of any dark spot on inner margin; from the two following also by the wholly yellow cilia of hindwings, and the anterior discal dots of forewings almost always separate; from *Oe. sulfurea* by the partially yellow cilia of forewings.

739. (442b.) *Oec. hilaropa*, n.sp.

♂. 18-20 mm. Head orange. Palpi ochreous-yellow, anterior edge of terminal joint and extreme base blackish. Antennæ dark grey. Thorax pale ochreous-yellow, anterior half blackish. Abdomen ochreous-yellow, suffused with grey, especially towards base. Legs dark grey, posterior pair ochreous-yellowish. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, very oblique; light ochreous-yellow; markings blackish, slightly purple-tinged; a narrow straight rather oblique fascia very near base; a transverse bar in disc at $\frac{2}{5}$, almost always connected with an elongate spot along inner margin beyond middle; a rather irregular narrow slightly inwards-curved fascia from $\frac{2}{3}$ of costa to anal angle; a subquadrate apical spot, continued as a cloudy line along hindmargin to anal angle: cilia dark grey. Hindwings dark fuscous; cilia light ochreous-yellowish, more or less suffused with pale grey on upper half of hindmargin and round apex.

Greenmount (on the range near Perth) and York, West Australia; in November, five specimens. Easiest separated from *Oe. protadelpha* by the wholly dark grey cilia of forewings, and the cilia of hindwings wholly yellow on lower half of hindmargin.

740. (442c.) *Oec. protadelpha*, n.sp.

♂♀. 15-20 mm. Head orange. Palpi ochreous-yellow, anterior edge of terminal joint, and extreme base blackish. Antennæ dark grey. Thorax ochreous-yellow, anterior half blackish. Abdomen dark grey, apex ochreous-yellow. Legs dark grey, posterior pair ochreous-yellow. Forewings elongate, costa slightly arched, apex round-pointed, hindmargin nearly straight, very oblique; ochreous-yellow; markings purple-blackish; a narrow straight oblique fascia very near base; a narrow direct fascia from middle of inner margin, reaching $\frac{2}{3}$ across wing, produced along inner margin as a wedge-shaped streak to near anal angle; an irregular narrow slightly inwards-curved fascia from $\frac{2}{3}$ of costa to anal

angle, dilated on costa, anterior edge with a short projection in middle, sometimes narrowly interrupted at lower extremity; a subquadrate apical spot, continued as a cloudy line along hindmargin to anal angle: cilia dark grey, beneath apex more or less distinctly suffused with yellowish. Hindwings dark fuscous; cilia grey, yellowish-tinged at base and beneath apex.

Perth, West Australia; in October and November, common.

741. (453a.) *Oec. politis*, Meyr.

(*Oecophora politis*, Meyr., Trans. N. Z. Inst. 1887, 81, ib. 1888.)
Wellington, New Zealand.

CREMNOGENES, Meyr.

742. (465a.) *Cremn. siderota*, Meyr.

(*Cremnogenes siderota*, Meyr., Trans. N. Z. Inst. 1887, 82.)
Mount Arthur, New Zealand.

CROSSOPHORA, Meyr.

743. (472a.) *Cross. aëtodes*, n.sp.

♂. 26 mm. Head, palpi, antennæ, and thorax rather dark grey. Abdomen pale grey, anal tuft whitish-ochreous. Legs dark grey, posterior pair whitish-grey. Forewings very elongate, costa gently arched, apex almost acute, hindmargin faintly sinuate, extremely oblique; grey; a minute inconspicuous darker dot in disc before middle, a second obliquely beneath and before it, and a third, larger and more distinct, in disc before $\frac{2}{3}$; two minute very inconspicuous darker dots obliquely transversely placed near together below middle: cilia grey, ochreous-tinged. Hindwings grey; cilia pale dull greyish-ochreous.

Mount Lofty, South Australia; one specimen received from Mr. E. Guest. Conspicuous in the genus by its large size.

66.* ARTIASTIS, n.g.

Head smooth, sidetufts appressed; tongue developed. Antennæ in ♂ with long fine ciliations (3-5), basal joint moderate, with pecten. Labial palpi moderately long, recurved, second joint with appressed scales, slightly rough beneath, terminal joint shorter than second, slender, acute. Thorax smooth. Posterior tibiæ clothed with long dense hairs above. Forewings with vein 1 furcate, 2 from near angle, 7 and 8 stalked, 7 to costa. Hind wings ovate-lanceolate or broadly lanceolate, cilia about 1; veins 3 and 4 remote, 6 and 7 parallel.

Nearly allied to *Crossophora*, from which it differs essentially only by the separation of veins 3 and 4 of the hindwings, which are almost parallel. The three species are best distinguished by the colour of the hindwings.

744. (474a.) *Art. heliacma*, n.sp.

♂♀. 14-15 mm. Head, palpi, antennæ, thorax, abdomen, and legs dark fuscous-grey; antennal ciliations 5; anal tuft and posterior tibiæ pale yellowish. Forewings elongate, narrow, costa gently arched, apex acutely produced, hindmargin sinuate, extremely oblique; dark fuscous-grey; an indistinct darker dot in disc at $\frac{2}{3}$; cilia dark fuscous-grey. Hindwings clear orange; cilia in ♂ ochreous-yellow, in ♀ grey.

Bathurst (2300 feet), New South Wales; Petersburg, South Australia; in October and November, two specimens.

745. (474b.) *Art. tepida*, n.sp.

♂♀. 18-21 mm. Head, antennæ, and thorax dark fuscous-grey, antennal ciliations 3. Palpi fuscous, somewhat sprinkled with grey-whitish. Abdomen fuscous. Legs dark fuscous, posterior tibiæ whitish-ochreous. Forewings elongate, rather narrow, costa gently arched, apex round-pointed or almost acute, hindmargin slightly rounded, extremely oblique; dark fuscous-grey; an obscure

darker dot in disc at $\frac{2}{5}$, a second rather obliquely before it on fold, and a third in disc at $\frac{2}{3}$; a very obscure darker line from $\frac{3}{4}$ of costa to anal angle, indented above middle: cilia rather dark fuscous. Hindwings and cilia glossy fulvous.

Sydney, New South Wales; Melbourne, Victoria; in September and October, four specimens. The larva feeds between joined leaves of *Eucalyptus*.

746. (474c.) *Art. ptochopa*, n.sp.

♀. 16-17 mm. Head, palpi, antennæ, thorax, abdomen, and legs grey; anal tuft whitish-ochreous; posterior tibiæ grey-whitish. Forewings elongate, narrow, costa gently arched, apex acute, hindmargin faintly sinuate, extremely oblique; grey, mixed with paler and darker; an obscure dark grey dot in disc at $\frac{2}{5}$, a second rather obliquely before it on fold, and a third in disc at $\frac{2}{3}$; an indistinct sinuate darker line from $\frac{3}{4}$ of costa to anal angle: cilia fuscous. Hindwings fuscous-grey; cilia fuscous.

Campbelltown, Tasmania; in December, two specimens.

MACROBATHRA, Meyr.

747. (479a.) *Macr. trimorpha*, n.sp.

♂♀. 14-16 mm. Head ochreous-yellow, back of crown generally narrowly dark fuscous. Palpi ochreous-yellow, anterior edge of terminal joint, and extreme base dark fuscous. Antennæ blackish, annulated with whitish-yellowish. Thorax ochreous-yellow, anterior margin dark fuscous. Abdomen orange-yellowish. Legs dark fuscous ringed with yellowish, posterior pair ochreous-yellowish. Forewings elongate-lanceolate; rather light ochreous-yellow; markings dark fuscous; a rather narrow straight oblique fascia almost at base, outer edge faintly whitish-margined; sometimes an irregular spot on inner margin beyond middle, and sometimes also a small spot on costa before middle, connected with dorsal spot by a slender cloudy angulated fascia, but these markings are often wholly absent; a moderate hindmarginal fascia, rather variable in

breadth on costa, anterior edge irregular or nearly straight, narrowed to a point at anal angle : cilia rather dark fuscous, often more or less strongly suffused with ochreous-yellowish beneath apex and below anal angle. Hindwings dark fuscous ; a more or less extended light ochreous-yellow longitudinal median patch from base to about $\frac{2}{3}$, sometimes emitting slender streaks along margins of cell ; cilia light ochreous-yellowish, more or less greyish-tinged towards base on upper part of hindmargin.

Carnarvon and Geraldton, West Australia ; in October, common, frequenting a phyllodineous *Acacia* which I have not identified. The variability of this species is extraordinary.

748. (479b.) *Macr. heterozona*, n.sp.

♂♀. 17-20 mm. Head light ochreous-yellow, sidetufts more orange. Palpi light yellow, terminal joint with two longitudinal blackish lines. Antennæ dark fuscous, annulated with whitish-yellowish. Thorax rather dark purplish-fuscous, apex of patagia sometimes yellowish. Abdomen light ochreous-yellow. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings elongate-lanceolate ; rather light ochreous-yellow ; a very slender dark fuscous rather oblique fascia almost at base, somewhat dilated on costa, not quite reaching inner margin ; in ♀ a broad rather dark purplish-fuscous fascia from costa about $\frac{2}{3}$ to inner margin, where it extends from beyond middle almost to anal angle, rather abruptly narrowed on costa, in ♂ represented only by a cloudy narrow spot along inner margin ; a moderate rather dark purplish-fuscous fascia along hindmargin, narrowed to a point at anal angle, anterior edge slightly curved, in ♀ more or less nearly confluent with preceding fascia : cilia rather dark ochreous-fuscous. Hindwings rather dark fuscous ; cilia pale brownish-ochreous. more or less yellowish towards base.

Northampton, West Australia ; six specimens in November, frequenting an unidentified phyllodineous *Acacia* which is there the commonest tree.

749. (484a.) *Macr. aphristis*, n.sp.

♀. 12-15 mm. Head white, back of crown dark fuscous. Palpi white, terminal joint with two longitudinal black lines. Antennæ blackish, annulated with white. Thorax yellowish-white, anterior margin dark fuscous. Abdomen bright yellow-ochreous. Legs dark fuscous, ringed with white, posterior pair ochreous-whitish. Forewings elongate-lanceolate; yellowish-white; markings dark fuscous; a moderate straight oblique fascia almost at base; a rather narrow slightly outwards-curved fascia from before middle of costa to beyond middle of inner margin; from middle of posterior edge of this fascia a branch proceeds to costa at $\frac{3}{4}$, with a projection beneath costa almost or quite confluent with hindmarginal fascia; a rather narrow hindmarginal fascia, more or less dilated towards costa, narrowed to a point at anal angle: cilia grey, beneath apex and beneath anal angle white. Hindwings dark grey; a small irregular hyaline patch at base; cilia grey, towards anal angle whitish-ochreous, base more or less yellowish-tinged, especially round apex.

Carnarvon and Northampton, West Australia; in October and November, four specimens.

750. (489a.) *Macr. pompholyctis*, n.sp.

♂♀. 16-17 mm. Head white, back of crown dark fuscous. Palpi white, second joint sometimes ferruginous-tinged beneath apex, terminal joint with two longitudinal black lines. Antennæ black, spotted with white. Thorax white, anterior half dark fuscous. Abdomen very pale yellowish-ochreous. Legs dark fuscous, ringed with white, posterior pair whitish-ochreous. Forewings elongate-lanceolate; dark fuscous; base of wing and of inner margin slenderly white; markings ochreous-white; a moderate fascia from $\frac{1}{4}$ of costa to $\frac{2}{3}$ of inner margin, gradually dilated upwards; a moderate somewhat semicircular spot on middle of costa; a narrow suberect spot from inner margin at $\frac{4}{5}$, rather outwardly oblique, reaching about half across wing; a narrow irregular fascia near apex, much dilated on costa: cilia

rather dark fuscous, on upper extremity of ante-apical fascia white, on lower extremity generally with a white basal spot. Hindwings rather dark fuscous-grey; cilia pale greyish-yellowish.

York, West Australia; in November, four specimens.

751. (490a.) *Macr. parthenistis*, n.sp.

♀. 15 mm. Head ochreous-whitish, back of crown dark fuscous. Palpi ochreous-whitish, extreme base dark fuscous. Antennæ ochreous-white. Thorax dark fuscous. Abdomen grey. Legs ochreous-whitish, anterior femora dark fuscous, middle and posterior tibiæ dark fuscous banded with white. Forewings, elongate-lanceolate; dark fuscous; markings white; a narrow transverse direct fascia from costa before $\frac{1}{4}$, not reaching inner margin; a small spot on middle of costa; a small spot above anal angle, not touching it; a moderate semicircular spot on costa at $\frac{2}{3}$; cilia rather dark fuscous, towards anal angle paler. Hindwings rather dark fuscous-grey; a small hyaline spot towards middle of base; cilia rather light fuscous.

Carnarvon, West Australia; in October, one specimen.

752. (491a.) *Macr. harmostis*, n.sp.

♂. 11 mm. Head and thorax dark fuscous. Palpi whitish, terminal joint dark fuscous. Antennæ blackish, with a broad white subapical band. Abdomen dark grey. Legs dark fuscous, middle and posterior tibiæ ringed with white. Forewings elongate-lanceolate; dark fuscous; markings white, partially somewhat ochreous-tinged; a narrow straight fascia from $\frac{1}{3}$ of costa to before middle of inner margin; a small spot on middle of costa; a small spot above anal angle, not quite touching it; a transverse inwardly oblique spot from costa at $\frac{2}{3}$, reaching nearly half across wing; cilia dark fuscous. Hindwings rather dark fuscous; an irregular elongate pale ochreous-yellowish median patch extending from base to about middle, not nearly approaching inner margin; cilia grey.

Geraldton, West Australia; in November, one specimen.

753. (496a.) *Macr. hyalistis*, n.sp.

♂. 12 mm. Head, antennæ, and thorax dark fuscous. Palpi whitish, terminal joint dark fuscous in front. Abdomen fuscous. Legs dark fuscous, posterior tibiæ ringed with white. Forewings elongate-lanceolate; rather dark fuscous; three rather small whitish spots on costa, reaching nearly half across wing, at $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$; first costal spot preceded by a darker fuscous transverse line reaching nearly to inner margin; a darker cloudy spot in disc before middle, and another on costa before third costal spot: cilia fuscous, beneath anal angle more whitish-fuscous. Hindwings rather dark fuscous, basal $\frac{2}{3}$ subhyaline except towards costa; cilia pale fuscous, more whitish-fuscous towards anal angle.

York, West Australia; in October, one specimen.

ZONOPETALA, Meyr.754. (33a.) *Zon. melanocentra*, n.sp.

♂. 22 mm. Head, palpi, antennæ, thorax, and abdomen ochreous-white; lower half of second joint of palpi dark fuscous. Legs greyish-ochreous, posterior pair pale whitish-ochreous. Forewings elongate, posteriorly somewhat dilated, costa gently arched, apex round-pointed, hindmargin sinuate, oblique; white, faintly ochreous tinged, and with some thinly scattered black scales; a black dot in disc at $\frac{1}{2}$: cilia white. Hindwings and cilia ochreous-whitish.

Melbourne, Victoria; in December, one specimen.

TRACHYNTIS, Meyr.755. (606a.) *Trach. xenopis*, n.sp.

♂. 12 mm. Head ochreous-yellow. Palpi dark fuscous mixed with whitish. Antennæ dark fuscous. Thorax dark fuscous, posterior margin whitish-ochreous. Abdomen rather dark fuscous,

becoming light ochreous-yellowish towards apex. Legs dark fuscous ringed with whitish-ochreous, hairs of posterior tibiæ ochreous-yellowish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin very obliquely rounded; dark fuscous, mixed with blackish; three cloudy, very irregular moderate white fasciæ, at about $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$; first rather bent towards base near costa, third forming a whitish-ochreous spot on costa, and indented in middle of posterior edge; a small very obscure blackish spot in disc at $\frac{2}{3}$; a second on fold beneath it, and a third in disc at $\frac{2}{3}$; an ochreous-white dot on costa near apex: cilia grey, basal half mixed with blackish, tips paler round apex. Hindwings and cilia rather dark fuscous.

Albany, West Australia; in December, one specimen.

PHILONYMPHA, Meyr.

756. (250a.) *Phil. chalcophragma*, n.sp.

♂♀. 13-15 mm. Head deep orange. Palpi dark fuscous, above whitish-yellowish. Antennæ dark fuscous. Thorax deep bronzy-ochreous, with obscure paler central and lateral stripes. Abdomen pale ochreous-yellowish, towards base rather dark grey. Legs dark fuscous, middle tibiæ and posterior pair ochreous-yellowish above. Forewings elongate, rather narrow, costa gently arched, apex almost acute, hindmargin extremely obliquely rounded, continuous with inner margin; bright deep bronzy-ochreous; a slender white streak along costa from base to beyond middle; an elongate black dot in disc before middle, a second on fold somewhat before first, and a third in disc beyond middle, first and third connected by a white mark; a fine white line along fold from base almost to anal angle, interrupted by second dot; a narrow inwards-curved white fascia from $\frac{3}{4}$ of costa to near anal angle, in ♀ fine and linear except on costa; an irregular white streak along hindmargin, sometimes partially absent: cilia greyish-ochreous, beneath anal angle blackish-grey, on costal markings whitish-ochreous. Hindwings and cilia dark grey.

Perth, West Australia; in November, five specimens.

APPENDIX II.

This contains additional localities and times of capture, and occasionally other notes, for those species earlier described.

1. *Palparia aurata*. Ardrossan, South Australia. Larva pink, back partly greenish-yellow; head reddish-brown; feeds exposed on *Eucalyptus* sp.; pupates in a flat oval case formed of two pieces of leaf; bred by Mr. E. Guest.

2. *P. lambertella*. Newcastle, New South Wales.

4. *P. rectiorella*. Newcastle, New South Wales, in October.

6. *P. eonephella*. Bathurst, New South Wales.

7. *P. micrastrrella*. Mount Lofty, South Australia; bred freely by Mr. E. Guest.

8. *P. euryphanella*. Georges Bay, Tasmania.

9. *P. semijunctella*. Glen Innes (3500 feet) and Bathurst (2500 feet), New South Wales; Ardrossan, South Australia.

10. *P. uncinella*. Glen Innes (3500 feet) and Mount Kosciusko (4300 feet), New South Wales; Georges Bay, Deloraine, and Hobart, Tasmania; Mount Lofty and Port Lincoln, South Australia; from September to January. Larva flesh-coloured; dorsal reddish-brown; lateral and spiracular reddish-brown, waved, narrower; head dark brown; feeds on *Eucalyptus* sp.; bred by Mr. E. Guest.

11. *P. aulacois*. Bathurst, New South Wales.

12. *P. falcifera*. Georges Bay, Tasmania, in January.

16. *Lepidotarsa chrysopoca*. Deloraine, Tasmania, in November. This species is variable, the forewings being sometimes partially suffused with fuscous.

19. *Eochrois callianassa*. Launceston, Deloraine, Campbelltown, and Georges Bay, Tasmania; from October to January.

21. *E. dejunctella*. Bathurst, New South Wales; Kangaroo Island, South Australia; Geraldton, West Australia; in October and November.

23. *E. pulverulenta*. Cooma (3000 feet), New South Wales.

25. *E. aclea*. Deloraine, Tasmania; in November, beaten commonly from *Leptospermum*.

26. *E. protophaës*. Fernshaw, Victoria; Campbelltown, Tasmania; in November.

28. *Zonopetala divisella*. Duaringa, Queensland; Bathurst (2400 feet), New South Wales; in March.

29. *Z. clerota*. Glen Innes (3500 feet), New South Wales; Fernshaw, Victoria; in December and March.

31. *Z. decisana*. An additional synonym (accidentally omitted) is *Oecophora ustella*, Walk. 678. Larva extremely stout; dirty whitish; head black; segments 2-4 each with a blackish dorsal plate; segments 5-7 grey on back; anal segment reddish-tinged. Feeds in a flat oval case on lichen-dust and dead wood; case formed of two plates, upper much larger so as to overlap all round, composed of fragments of wood woven with silk; in September and October.

34. *Heliocausta incarnatella*. Larva feeds between joined leaves of *Eucalyptus* sp., in August. Pupa in a very strong white cocoon between the leaves.

35. *H. inceptella*. Quorn and Wirrabara, South Australia; in September.

36. *H. severa*. Glen Innes (3500 feet), New South Wales; Wirrabara and Mount Lofty, South Australia; York, West Australia; from October to December. Larva rather stout; whitish-grey or pale greenish, posterior margins of segments whitish-ochreous; a broad rather irregular fuscous lateral stripe; head ochreous-brown, spotted with dark fuscous; second segment ochreous-brown, on sides blackish; third with a blackish-grey lateral spot in place of stripe; anal segment yellow-whitish, dotted with dark fuscous. Feeds between joined leaves of *Eucalyptus hemiphloia*, in October.

37. *H. limbata*. Sydney and Mount Kosciusko (4300 feet), New South Wales; in October and January.

41. *H. hemiteles*. Glen Innes (3500 feet), Newcastle, and Bathurst, New South Wales ; in December.

43. *H. triphaenatella*. Bathurst (2400 feet) and Sydney, New South Wales ; in November.

47. *H. euselma*. Melbourne, Victoria.

50. *Euchaetis metallota*. Melbourne, Victoria.

51. *Euryplaca ocellifera*. Glen Innes (3500 feet), New South Wales.

52. *E. demotica*. Mount Kosciusko (4300 feet), New South Wales ; Deloraine, Tasmania ; in December.

57. *Hoplitica sobriella*. Bathurst (2500 feet), New South Wales ; Port Lincoln, South Australia ; in November and December.

58. *H. myodes*. Glen Innes (3500 feet), New South Wales ; in December.

60. *H. carnea*. Bathurst (2500 feet), New South Wales.

61. *H. repandula*. Glen Innes (3500 feet), New South Wales ; Georges Bay, Tasmania ; in December.

62. *H. pudica*. Glen Innes (3500 feet) and Blackheath (3500 feet), New South Wales ; in December.

63. *H. leucerythra*. Glen Innes (3500 feet), Bathurst (2500 feet), and Mount Kosciusko (4000 feet), New South Wales ; Mount Lofty, South Australia.

65. *H. rufa*. Shoalhaven, New South Wales ; Melbourne, Victoria ; Mount Lofty, South Australia ; from November to January.

66. *H. absumptella*. Mount Lofty, South Australia.

69. *Eulechria griseola*. Bathurst (2500 feet), New South Wales.

71. *E. cremnodes*. Bathurst (2500 feet), New South Wales ; also from Victoria.

78. *E. pantelella*. Glen Innes (3500 feet), New South Wales ; in December.

81. *E. achalinella*. Glen Innes (3500 feet) and Bathurst (2300 feet), New South Wales; Georges Bay, Tasmania; from December to March.

82. *E. triferella*. Tenterfield, New South Wales; October to December.

83. *E. brachypepla*. Fernshaw, Victoria.

89. *E. leucopelta*. Bathurst (2300 feet), New South Wales.

90. *E. poecilella*. Bathurst (2500 feet), New South Wales; Mount Lofty, South Australia.

91. *E. habrophanes*. Bathurst (2500 feet), New South Wales; in March.

97. *E. amaura*. Bathurst (2500 feet) and Blackheath (3500 feet), New South Wales; in March.

98. *E. dolosella*. Bathurst (2500 feet), New South Wales; in March.

99. *E. adoxella*. Bathurst (2500 feet), New South Wales; Georges Bay, Tasmania; Mount Lofty, South Australia; Tasmanian captures in January, but it does not appear so early on the continent.

101. *E. paurogramma*. Deloraine, Tasmania; November to January.

102. *E. cimmeriella*. Cooma (3000 feet), New South Wales.

103. *E. xylopterella*. Glen Innes (4500 feet), New South Wales; in December.

104. *E. siccella*. Mount Lofty, South Australia.

105. *E. grammatica*. In June, several specimens.

106. *E. scopariella*. Taken freely in June.

109. *E. aërodes*. Bathurst (2700 feet), New South Wales.

110. *E. tanyscia*. Petersburg, South Australia.

111. *E. ombrophora*. Carnarvon, West Australia.

116. *Leistarcha iobola*. An earlier name is *scitissimella*, Walk. 807, which must be adopted. Sydney, New South Wales; in September.

118. *Oenochroa endochlora*. Mount Lofty, South Australia.
119. *Oe. iobaphes*. Georges Bay, Tasmania ; in December.
120. *Machetis aphrobola*. Campbelltown, Tasmania ; in September.
121. *Placocosma hephaestea*. An earlier name is *resumptella*, Walk. 681, which must be adopted.
126. *Linosticha scythropa*. Georges Bay, Tasmania.
132. *Ioptera aristogona*. In June and July, several specimens. ♂♀. 21-28 mm.
134. *Macronemata elaphia*. Mount Kosciusko (5600 feet), New South Wales ; in January.
136. *Phloeopola asbolaea*. Warragul, Victoria.
139. *P. psephophora*. Blackheath (3500 feet), New South Wales ; Fernshaw, Victoria ; Georges Bay, Tasmania.
140. *P. turbatella*. Fernshaw, Victoria.
141. *P. confusella*. Newcastle, New South Wales.
143. *P. banausa*. Newcastle and Bathurst (2500 feet), New South Wales ; Albany, West Australia.
147. *Sphyrrelata ochrophaea*. Launceston, Tasmania.
148. *S. indecorella*. Melbourne, Victoria.
149. *S. melanoleuca*. This name is misprinted *melanaleuca*.
169. *Nephogenes foedatella*. Duaringa, Queensland ; Glen Innes (3500 feet), New South Wales.
175. *Antidica eriomorpha*. An earlier name is *pilipes*, Butl., Ann. Mag. Nat. Hist. 1882, 102, which must be adopted. Warragul, Victoria.
177. *Philobota arabella*. Bathurst (2300 feet), New South Wales.
178. *P. biophora*. York, West Australia.
180. *P. irruptella*. Newcastle, New South Wales.
181. *P. chrysopotama*. Bathurst (2400 feet), New South Wales.
182. *P. catascia*. Bathurst (2400 feet), New South Wales.

184. *P. monolitha*. Bathurst (2500 feet), New South Wales.
186. *P. auriceps*. Bathurst (2500 feet), New South Wales.
187. *P. declivis*. Glen Innes (3500 feet), Bathurst (2400 feet), and Cooma (3000 feet), New South Wales.
190. *P. hypocausta*. Melbourne, Victoria.
192. *P. xiphostola*. Mount Lofty, South Australia.
198. *P. atmobola*. Campbelltown and Georges Bay, Tasmania.
199. *P. erebodes*. Toowoomba (2000 feet), Queensland.
201. *P. leucomitra*. Mount Kosciusko (4300 feet), New South Wales.
202. *P. herodiella*. Mount Kosciusko (4300 feet), New South Wales.
203. *P. hapala*. This name is misprinted *hapula*.
204. *P. glaucoptera*. Bathurst (2500 feet), New South Wales.
213. *P. squalidella*. Georges Bay, Tasmania; Mount Lofty, South Australia; in January.
214. *P. productella*. Glen Innes (3500 feet) and Bathurst (2300 feet), New South Wales.
215. *P. tyroxantha*. Bathurst (2700 feet), New South Wales.
216. *P. melirrhoa*. Bathurst (2700 feet), New South Wales.
219. *P. anachorda*. Bathurst (2700 feet), New South Wales.
222. *P. interlineatella*. Mount Lofty, South Australia; Geraldton and Albany, West Australia.
223. *P. bracteata*. Newcastle, New South Wales; Mount Lofty, South Australia.
224. *P. trijugella*. Bathurst (2500 feet), New South Wales; in March.
226. *P. aurinatella*. Mount Kosciusko (4000 feet), New South Wales.
228. *P. euzantha*. Georges Bay, Tasmania; Mount Lofty, South Australia.
229. *P. xanthiella*. Bathurst (2700 feet), New South Wales; Perth, West Australia.

230. *P. bimaculana*. An earlier name is *fascialis*, Fab., Ent. Syst. 644, which must be adopted. Bathurst (2400 feet), New South Wales; Kangaroo Island, South Australia.

232. *P. occidua*. Bathurst (2500 feet), New South Wales.

237. *Leistomorpha brontoscopa*. Bathurst (2500 feet), New South Wales.

239. *Compsotropha selenias*. Bathurst (2500 feet), New South Wales; in November.

240. *C. strophiiella*. Deloraine, Tasmania; Carnarvon and Perth, West Australia.

243. *Eriodyta (Philobota) sigmophora*. Melbourne, Victoria.

245. *E. (Philonympha) abductella*. Warragul, Victoria.

246. *E. leptostola*. Bathurst (2500 feet), New South Wales; Warragul, Victoria.

253. *Peltophora atricollis*. Bathurst (2500 feet), New South Wales.

256. *P. marionella*. Bathurst (2500 feet), New South Wales; York, Perth, and Albany, West Australia; in November. In West Australian specimens the dark border of the hindwings is usually considerably broader, sometimes occupying nearly half the wing, but no distinction can be drawn by means of this character, which varies much individually.

259. *P. (Philobota) thermochroa*. Mount Lofty, South Australia.

261. *P. carphalea*. Duaringa, Queensland.

265. *P. proximella*. Glen Innes (3500 feet), New South Wales; Fernshaw, Victoria; in December.

266. *P. basiplaga*. Glen Innes (3500 feet), New South Wales.

273. *Orophia cinetica*. Glen Innes (3500 feet) and Bathurst (2700 feet), New South Wales; Mount Lofty, South Australia; in February and March.

276. *Protomacha cara*. Bathurst (2700 feet), New South Wales; Deloraine, Tasmania; in November and December.

278. *Phryganeutis cinerea*. Sydney, New South Wales; in May.

280. *Saropla hyperocha*. Mount Kosciusko (5000 feet), New South Wales; in January.

286. *Pleurota tephрина*. Glen Innes (3500 feet), New South Wales; Geraldton, West Australia; in December.

287. *P. psephena*. This name is misprinted *psephena*.

290. *P. brevivittella*. Duaringa, Queensland.

294. *P. psammoxantha*. Glen Innes (3500 feet), New South Wales.

297. *P. chlorochyta*. Mount Kosciusko (5000-6000 feet), New South Wales; in February.

298. *P. stasiastica*. Fernshaw, Victoria; in November and December.

299. *P. argoptera*. Mount Kosciusko (4000 feet), New South Wales; Fernshaw, Victoria; Albany, West Australia; in January and March.

303. *Eulachna dasyptera*. Duaringa, Queensland.

307. *Coesyra dichroella*. Glen Innes (3500 feet) and Bathurst (2400 feet), New South Wales; in November and December.

308. *C. iozona*. Glen Innes (3500 feet), New South Wales.

309. *C. distephana*. Albany, West Australia.

312. *C. triptycha*. Glen Innes (3500 feet), New South Wales; in November and December.

316. *C. sanciotoma*. Bathurst (2500 feet), New South Wales; in November.

317. *C. annularis*. Melbourne, Victoria. *Philobota athletica*, Ros., Ann. Mag. Nat. Hist. 1885, 443, is a later synonym of this.

323. *C. paracycla*. Bathurst (2500 feet), New South Wales.

328. *C. stenoptera*. Duaringa, Queensland; Glen Innes (3500 feet), New South Wales; Georges Bay, Tasmania; Perth, West Australia; in November and December.

334. *C. parvula*. Georges Bay, Tasmania ; from October to March.
335. *C. aspasia*. Geraldton, Perth, and Albany, West Australia ; from October to December.
336. *C. panxantha*. Blackheath (3500 feet), New South Wales ; in November.
337. *C. amyloides*. Toowoomba (2000 feet), Queensland ; in December.
349. *Brachynemata singulata*. Bathurst (2700 feet) and Cooma (3000 feet), New South Wales ; Stawell, Victoria ; Carnarvon, Geraldton, and Albany, West Australia ; in October and January.
350. *Microbela epicona*. York, West Australia.
353. *Heterozyga coppatias*. York, West Australia.
354. *Oxythecta alternella*. Fernshaw, Victoria.
356. *O. hieroglyphica*. Albany, West Australia ; in December.
359. *O. acceptella*. Glen Innes (3500 feet), New South Wales.
360. *Crepidosecles iostephana*. Sydney, New South Wales ; in November.
362. *Ocystola hemicalypta*. Larva feeds in a case, consisting of a hollowed cylindrical twig, on *Eucalyptus*.
366. *O. hemisema*. Launceston, Tasmania ; Albany, West Australia ; in December.
367. *O. oxytora*. Georges Bay, Tasmania ; in January.
370. *O. acrozantha*. Cooma (3000 feet), New South Wales ; Melbourne, Victoria ; in January.
377. *O. psamathina*. Mount Lofty, South Australia.
385. *O. illuta*. Bathurst (2700 feet), New South Wales ; Mount Lofty, South Australia.
386. *O. lithophanes*. Campbelltown, Tasmania ; in December.
387. *O. monostropha*. Toowoomba (2000 feet), Queensland ; Mount Kosciusko (4300 feet), New South Wales ; Mount Lofty, South Australia ; in December and January.

388. *O. homoleuca*. Glen Innes (3500 feet), New South Wales; Fernshaw, Victoria; York, West Australia; in December.

390. *O. glacialis*. Bathurst (2500 feet), New South Wales; in March.

407. *Machaeritis psathyra*. Albany, West Australia; in September and October.

410. *M. aegrella*. Geraldton and Perth, West Australia.

419. *Leptocroca sanguinolenta*. Mount Lofty, South Australia.

433. *Oecophora ochroma*. Melbourne, Victoria.

434. *Oe. (Guestia) uniformis*. Mount Lofty, South Australia. ♂♀. 19-20 mm. Forewings with a third dot on fold rather obliquely before first. Hindwings distinctly tinged with purple-reddish.

441. *Oe. lymphatica*. Mount Lofty, South Australia.

472. *Crossophora thetias*. Albany, West Australia; in December.

475. *Ochlogenes advectionella*. Albany, West Australia; in December.

476. *Disselia aleurota*. Mount Lofty, South Australia.

492. *Macrobathra alternatella*. York and Perth, West Australia.

496. *M. synastra*. Geraldton and York, West Australia; in November.

504. *M. nephelomorpha*. Melbourne, Victoria.

509. *Palparia theophila*. Georges Bay, Tasmania.

515. *Zonopetala synarthra*. Mount Lofty, South Australia.

516. *Z. erythrosema*. Melbourne, Victoria.

517. *Heliocausta atoecha*. Newcastle, New South Wales.

This concludes the family for the present. Large as is the number of species recorded,—in no single region has any family of the *Tineina* been previously found to contain two-thirds of the total here reached—no collection can be made in any untouched locality without the immediate discovery of new forms. The uniformity of structure throughout the whole is extraordinary, and the limits of the family as laid down may be considered

established. The generic classification of this mass of closely-related species has been difficult; the points of structure on which it has been necessary to rely are in some cases slight, in others difficult of observation, and I cannot hope not to have committed some errors of judgment; yet I trust that this paper may be found to afford a reasonably sound groundwork for the study of a highly interesting and attractive group.

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ON SIMPLE STRIATED MUSCULAR FIBRES.

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A comprehensive study of striated muscular tissue as it is exhibited throughout the various classes of the animal kingdom appears to lead to the conclusion that there are two main types not in any way directly related to one another, distinguishable among the fibres which are classed together generally as striated. Of these the one—the *compound* type of fibre—I have dealt with elsewhere as regards its structure and distribution. The present paper contains some observations on the second or *simple* type of fibre.

These simple fibres differ for the most part only in the presence of transverse striations from the non-striated fibres of the same animal; they are of the same, or nearly the same, thickness as the latter, are not more readily split into longitudinal elements, and each consists, almost invariably, of a single cell. The substance of such fibres is, however, transversely striated; it is marked by regularly arranged transverse lines or bands, which may be visible in the fresh condition or may only be brought out by the action of staining agents; in some instances the striation may be due to the division of the fibre into a series of alternating bands or discs of different optical properties, such as are presented by the muscular fibres of the compound striated type; but of the presence in any simple striated fibre of transverse networks, such as characterise the compound fibres, I have not been able to find sufficient evidence.

Fibres of this description have been described by Max Schultze*, Brücke,* Virchow,* C. F. Marshall,† and others as occurring in the umbrella of certain Medusæ. Many of the muscular fibres of *Holothuria*, *Synapta*, *Echinus*, *Asterias* and other Echinoderms possess, according to Leydig,‡ an appearance of transverse striation which is due to their being made up of wedge-shaped segments closely compressed together. Schwalbe,§ however, describes the muscular fibres of *Ophiothrix* as possessing a peculiar double-oblique striation about the nature and significance of which there is considerable room for doubt; it is at least probable that in this, as in other instances to be afterwards referred to, in which Schwalbe describes this form of striation, the supposed *double character* of the markings was due to a wrong deduction from the appearances presented by the fibres.||

In the pedicellariæ of Sea-Urchins the fibres of the occlusor muscles, as first pointed out by Geddes and Beddard,¶ present an appearance of transverse striation. These markings are not readily visible, at least in the Echinid I have made the subject of examination (*Strongylocentrotus erythrogrammus*), in the living condition, and I have failed to bring them out by the gold method; but in specimens treated with watery solution of hæmatoxylin and yellow chromate of potash, after Heidenhain's method, they come

* Quoted by Marshall as below.

† "On the structure and distribution of striped and unstriped muscle in the animal kingdom." 'Quart Journ. Micro. Sci.' Vol. XXVIII. (1887).

‡ "Lehrbuch der Histologie."

§ "Ueber den feineren Bau der Muskelfasern wirbelloser Thiere." 'Archiv für Mikro. Anat.' V. (1869).

|| Engelmann ("Ueber den faserigen Bau der contractilen Substanzen mit besonderer Berücksichtigung der glatten und doppelt schräggestreiften Muskelfasern." 'Pflüger's Archiv,' XXV. 1881,) recognises Schwalbe's double-oblique striation, and explains it much as Fol seeks to explain all cases of supposed transverse striation in the Mollusca. (Vide *infra*).

¶ "Sur l'histologie des pedicellaires et des muscles de l'oursin." 'Comptes Rendus' 1881. Also, F. Beddard, "Striated muscles in Echinida," 'Ann. Mag. Nat. Hist.' (5) Vol. XVII. (1886).

out with such regularity that they must be held to be due to the fibres being made up of alternating series of stainable and unstainable segments, which, however, are not distinguishable by a marked difference in optical properties.

Among the lower worms few instances of the occurrence of such fibres have been recorded. According to Leydig* the uterus of *Echinorhynchus nodulosus* contains in its walls transversely striated fibres; but in his account of the same organ in the common species of the genus (*E. gigas*), Andres† makes no mention of striated fibres, and they do not occur in the only species I have had the opportunity of examining. Again G. R. Wagener‡ described the muscular fibres of Nemertines as transversely striated; but the striations seem to be of a very indefinite character.

To the category of simple striated fibres appears to be referable also the striated muscular tissue found by Jourdan§ in *Protula intestinum*, in which he describes the striations as being as numerous and as fine as in the striated fibres of Mammals. In certain other Polychæta striated (simple) fibres have been described by various observers, but the appearance of striation seems to have been produced in many of these cases, if not in all, by the folding or wrinkling of the fibre||. In the muscular pharynx of *Aphrodita*, Lebert¶ described striated fibres, but this is a mistake—the appearance described and figured being due to the crossing at right angles of two sets of simple non-striated

* "Lehrbuch der Histologie."

† "Weibliches Geschlechtsapparat des *Echinorhynchus gigas*." 'Morph. Jahrb.' IV. Bd.

‡ "Ueber die Muskelfaser der Evertibraten." 'Archiv von Reichert und du Bois-Reymond,' 1863.

§ "Sur la structure des fibres musculaires de quelques Annélides polychètes." 'Comptes Rendus,' 1887.

|| Vide Rohde, "Die Musculatur der Chætopoden." 'Zool. Anz.' VIII. Jahrg.

¶ "Recherches sur la formation des muscles dans les animaux." 'Ann. des Sci. Nat. Zool.' (3) Tome XIII. (1850).

fibres, the annular and the radial. The only other class of "Worms" in which simple striated fibres appear to occur is in certain Rotatoria; but these cases I have not had the opportunity of examining; it is possible that they may be degenerate compound fibres.

In connection with no group of animals do we find a greater conflict of statements regarding the muscular tissue than in the case of the Mollusca. Striated fibres have been described in the swimming lobes of the Pteropoda and Heteropoda, in the buccal mass of various Gasteropoda (Leydig,* Schwalbe,† Marshall,‡ Harvey Gibson§), in the heart of various Mollusca (Leydig,* Dogiel,|| Gibson§), in the retractor of the eyes of *Helix* (Gegenbaur¶), the abductors of various Lamellibranchs (Schwalbe,† Wagener,** Marshall‡), the abductor of the Pectinidæ alone (Blanchard††) while Fol‡‡ has recently announced the opinion that 'true striation' does not occur in any Mollusc. I have not been able to go over more than a small portion of the ground covered by the literature of this part of the subject; but the observations which I have been able to make have led me to a conclusion which may be said to be intermediate between the opinion expressed by Blanchard and that expressed by Fol.

* "Lehrbuch der Histologie."

† L.c.

‡ L.c.

§ "Anatomy and Physiology of *Patella vulgata*, Part I. Anatomy," 'Trans. Roy. Soc. Edin.' Vol. XXXII. (1885).

|| "Die Muskeln und Nerven des Herzens bei einigen Mollusken." 'Archiv f. mikro. Anat.' XIV. Bd. (1877).

¶ "Die Entwicklungsgeschichte der Landgastropoden." 'Zeitschr. f. wiss. Zool.' III. Bd. (1851).

** "Ueber die Muskelfaser der Evertebraten." 'Archiv von Reichert und du Bois-Reymond,' 1863.

†† "A propos des muscles striés des Mollusques Lamellibranches." 'Bull. Soc. Zool. France,' 1888. Also, "Sur la structures des muscles striés des Mollusques Lamellibranches." 'Bull. Soc. Zool. France,' 1888.

‡‡ "Sur la structure microscopique des muscles des Mollusques." 'Comptes Rendus,' CVI. (1888).

The principal molluscan muscles which I have examined are the following:—retractor muscles of eye of *Helix aspersa*, muscles of the odontophores and buccal mass of the same species, the same muscles in a species of *Limax*, a species of *Aplysia*, a species of *Triton* and a species of *Patella* (*P. tramoserica*), the adductor muscles of *Petricola* and of *Lima*. The only one of these that exhibits anything that can be called regular and well-marked transverse striations is the last, in which the fibres closely resemble those of *Pecten* as described and figured by Blanchard. In the other cases mentioned, when an appearance of transverse striation presents itself (as in some of the fibres of the buccal mass of *Helix* and *Aplysia*), this is due to the arrangement of the granular matter of the core, and not to striation of the cortical muscle-substance.

With *Lima*, however, as with *Pecten*, and probably in other instances which I have not examined, the case is quite different. Here the transverse markings are very distinct and very regular. Blanchard regards them as due to the same cause as in the Arthropoda and Vertebrata—the substance of the fibre being made up of alternating zones of two kinds of material, differing from one another in optical properties and in behaviour to staining agents; and he also describes narrow discs of doubly-refracting material crossing the simply-refracting zones and representing Krause's membranes. Fol, on the other hand, maintains that the appearance of striation in this as in other instances in which it has been described as occurring among the Mollusca, is due to the spiral twining of the fibrillar cortical layer round the granular axis.

When the fibres in question are treated with Heidenhain's hæmatoxylin a series of transverse or oblique bands come more distinctly into view owing to the action of the staining agent. These bands which become stained, are separated from one another by narrower uncoloured bands, and, according to Blanchard's account, the broad bands are doubly refracting, the narrow bands singly. According to Fol, the broad bands are the spirally-coiled fibrillar substance of the cortex, the light spaces between them

being, I presume, the interval between successive turns of the spiral. When a specimen of the tissue in question, which has been hardened in alcohol and afterwards stained by means of Heidenhain's hæmatoxylin method, is crushed, either in oil of cloves or in glycerine, by a series of blows on the cover-glass, the fibres tend to break up into fragments. In a considerable measure this breaking-up is longitudinal—the fibre being thereby split into a number of fibrillæ. These fibrillæ nearly all exhibit the striation described above; but certain of them in the axis of the fibre do not show it—being apparently composed of a homogeneous substance. Besides this division into fibrils the fibres exhibit in very many places a form of breaking-up which may be described as a peeling-off of the superficial layer. The cortical layer becomes split longitudinally and separates off from the rest, often becoming spread out into a broad ribbon. In parts where this occurs the broad and narrow bands can be seen to greater advantage than in the entire fibre, and a careful examination shows that this cortical layer is not composed of spirally wound fibrillar substance; but is a continuous layer divided into regular transverse, or more frequently, oblique, layers of stainable and unstainable material.*

As first noticed by Hancock † the posterior occlusor muscles of *Waldheimia flavescens* consist of striated fibres. These are very similar to the striated fibres of *Lima* just described, and the marking is apparently due to the same cause. The striation is readily visible in the case of specimens preserved by means of corrosive sublimate and alcohol, or alcohol alone; but the striations become much more distinct after the employment of Heidenhain's hæmatoxylin; I have not had the opportunity of examining fresh specimens.

Simple striated fibres occur also in the Bryozoa, in which class they were described by Allman ‡ in the case of the retractors of

* Since the above was written I see from an abstract in the 'Journal of the Royal Microscopical Society' (October, 1888) that Fol has withdrawn his statement in so far as *Pecten* and *Lima* are concerned.

† "On the organization of the Brachiopoda." 'Phil. Trans.' 1858.

‡ "A Monograph of the Fresh-water Polyzoa." 'Ray Society,' 1856.

the Phylactolæmata, though this is denied by Nitsche * and by Schwalbe †. They occur also in the oclusor muscles of the avicularia of the Cheilostomata (*Diachoris*, *Bugula*), in which their occurrence has not, so far as I can ascertain, been noticed hitherto. The striation is somewhat similar to that already noticed as occurring in the muscles of the pedicellariæ of Sea-Urchins; but is more strongly marked, being faintly visible in the living state and coming out with great distinctness in specimens treated either with Heidenhain's hæmatoxylin or by means of the gold-formic acid method. Each fibre has a single small intrinsic nucleus.

The muscles of *Salpa* were described by Eschricht ‡ as more strongly striated than those of any Arthropod or Vertebrate. I have not succeeded in making out striated fibres in the transverse muscular bands of *Salpa* or of *Doliolum*, but this is probably due to the condition of my specimens.

In the heart of *Salpa*, Dogiel describes well-marked striated fibres, and in *Cynthia* a similar tissue was observed by Schwalbe; I find the same to hold good of *Clavellina*—the striations in this case being very faint. It seems most likely that these instances of striated fibres in the *Urochorda* will prove to be examples of the compound type.

* "Beiträge zur Anatomie u. Entwicklungsgeschichte der Phylactolären Süsswasser Bryozoen." 'Archiv von Reichert u. du Bois-Reymond,' 1868.

† "Ueber den feineren Bau der Muskelfasern wirbelloser Thiere." 'Archiv f. Mikro. Anat.' V. p. 205 (1869).

‡ "Anat.-Physiol. Unters. über die Salpen." 'Müller's Archiv.' 1841.

JOTTINGS FROM THE BIOLOGICAL LABORATORY OF SYDNEY UNIVERSITY.

BY WILLIAM A. HASWELL, M.A., D.Sc., LECTURER ON BIOLOGY.

11. ON *SACCOLINA* INFESTING AUSTRALIAN CRABS.

In specimens of *Nectocarcinus integrifrons*, a Brachyuran frequently brought up in considerable numbers in the trawl in Port Jackson, and of *Thalamita sima*, which is not quite so common, there is often to be observed below the abdomen a large, firm but soft, brown body, which on examination proves to be a Rhizocephalan of genus *Sacculina*. The infested crabs have all hitherto, with a single exception, proved to be males; these had all undergone a singular malformation, and I found that I was enabled to extend to these Australian species the very remarkable observations made in the last two years by Giard on the European crabs—*Stenorhynchus phalangium*, *Carcinus maenas*, and *Portunus holzschuhi*.* At first sight on examining one of these specimens of *Nectocarcinus* or *Thalamita* harbouring the *Sacculina*, one might be disposed unhesitatingly to put it down as a female, the broad bulging abdomen concealing a mass of eggs; but on turning the abdomen back one found, not the expected eggs attached to the abdominal appendages, but the parasite above-mentioned fitting in with perfect accuracy so as to be completely covered and protected by the abdomen when the parts were in place, and firmly fixed to the crab by a short stalk perforating the sternal membrane of the third segment.

Not only, however, were the eggs found to be replaced by this parasitic crustacean, but the sexual apertures were found to be situated on the last segment of the cephalothorax; and the pos-

* "Parasitic castration and its influence upon the external characters of male sex in the Decapod Crustacea," (translated from the "Bulletin scientifique du Nord") Ann. Mag. N. Hist. (5), Vol. XIX. pp. 325-345 (1887). For the life-history of the parasite, see Yves Delage, "Evolution de la Sacculine," Arch. de Zool. exp. et gén. (2), Tome II. (1884).

terior abdominal appendages, which in the female crab are well developed and serve for the attachment of the eggs, were found to be wanting. The specimens in fact were males; but males in which such a remarkable modification had taken place that they presented externally all the characters of the females, and in which, moreover, the external parts specially characteristic of the male—the modified appendages of the first and second segments of the abdomen—were quite rudimentary.

12. ON A METHOD OF PREPARING BLASTODERMS OF THE FOWL.

The following method I have found of great value in expediting the process of removing and preparing the blastoderms of early stages (up to the third day), and also in diminishing the risk of injury. The fixing fluid used is ten per cent. nitric acid, as employed by Whitman* and others. The novel point in the method is the mode of getting rid of the entire white without any trouble and without risk of damaging the blastoderm.

An ordinary *conical* measuring glass of a capacity of 100 c.c., with the edge turned out and with a large 'lip,' is placed in a flat dish and is filled to the very brim with nitric acid. The egg shell is then broken and the entire contents poured into the glass in exactly the method adopted in the kitchen, except that the egg is held when being opened close over the glass so that there may be as little disturbance as possible. The glass being brim-full, when the contents of the egg are added to it a quantity of the fluid runs over the sides; with this there begins to run some of the external, more fluid, part of the white; as this runs over, it by its weight gently draws the firmer part of the white with it, and finally the firm layer which immediately invests the yolk is peeled off as one might peel off the outermost coat of an onion, leaving the yolk and blastoderm with the investing vitelline membrane quite entire and perfectly clean in the glass—the entire white having in this way spontaneously thrown itself off. The whole process takes only two or three seconds. If, as occasionally happens owing to

* 'Methods in Microscopical Anatomy and Embryology,' p. 167.

some of the fluid having been splashed out of the glass in pouring in the egg, the white does not begin to run over the edge, a little of it should be pushed over the lip and left to draw the rest after it in the manner described.

The entire yolk with the blastoderm should be left for half-an-hour in the glass with the nitric acid: it may then, part of the acid having been poured off, be turned into a large dish full of water which has to be changed several times. After the yolk has been for a few minutes in the water the blastoderm has to be cut out with scissors, when it will readily peel off from the underlying yolk, and the vitelline membrane readily comes away. The blastoderm is then to be left for half-an-hour in water, which should be renewed, and then transferred to weak alcohol (60%), in which it should remain for twelve hours; it should then be placed for two days in 90% alcohol, and then stained by immersion for three or four hours in Ehrlich's hæmatoxylin (crystallised hæmatoxylin 2 grms., water 100 c.c., glycerine 100 c.c., acetic acid 10 c.c.), followed for a few minutes by acidulated alcohol (97 c.c. 70% alcohol, 3 c.c. hydrochloric acid), and that in turn for half-an-hour or more by alcohol diluted to 70% by the addition of ordinary tap-water or water artificially rendered slightly alkaline. The specimen will then be ready, after passing through 90% and absolute alcohol, for mounting as a whole. For sections it is better to omit the acidulated alcohol, and to allow the specimen three days further hardening in 90% and absolute alcohol.

The important point here is, of course, the ease and rapidity with which the white is got rid of, so that a large number of blastoderms may be prepared in a comparatively short time. But the mode of subsequent treatment described above, which is applicable to blastoderms prepared in other ways, gives results, particularly for whole blastoderms, such as are not obtained by any other of the many methods I have tried.

13. NOTE ON *UROLOPHUS TESTACEUS*.

In my "Studies on the Elasmobranch Skeleton," published in the "Proceedings" of this Society (Vol. IX.) there is a very brief

note on the skeleton of a species of *Urolophus*, which, so far as I had examined it at that time, seemed to agree in almost every particular with that of *Trygon pastinaca*. A more careful study of the anatomy of the latter species and of the common *Urolophus testaceus*, has, however, shown me that there are some important points of difference which I previously overlooked.

The agreement in the form of the anterior vertebral plate with its several ridges, processes and articular surfaces is very close.* In both species the vertebræ of the posterior precaudal region undergo a varying amount of coalescence. In *Urolophus* a continuous strip of calcified cartilage runs on either side of the centra throughout this part of the spinal column and renders the whole very rigid. In the skull both have much more prominent post-orbital processes than are generally to be found in the Rays; and both have the pre-frontal foramen very wide and coalescent behind with the supra-cranial fontanelle; in *Urolophus* the latter is much narrower than in *Trygon*. Both have a strong bridge of cartilage protecting the facial nerve where it emerges from the cranium. The absence of a distinct rostrum is characteristic of the family, but both have a curious cartilage situated between the nasal openings at the anterior end of the skull. This is divided behind into two slender crescents, each of which forms the inner margin of the corresponding nasal opening.† *Trygon pastinaca* has also a pair of singular little slender cartilaginous processes projecting almost directly forwards from the anterior border of the skull. The nasal cartilages are of similar general shape in the two species. In *Urolophus* there is a broad and very thin lamina of cartilage (upper labial) supporting the naso-frontal lobe; and this is divided up behind into a fringe of very delicate filaments one of which supports each of the delicate filaments with which the lobe is beset behind. Whether this cartilage is present or absent in *Trygon* I am uncertain.

* In the paper above referred to a paragraph on p. 104, which refers to the spinal column and ribs of *Hypnos* has been misplaced, so that it appears to form a part of the account of *Urolophus* sp.

† In the specimen of *Trygon pastinaca* previously examined these were not observed.

In *Trygon pastinaca* the hyoid arch (which, as in *Urolophus*, is exactly like the branchial arches), articulates partly with the proximal end of the hyomandibular,* but has also a separate articulation with the side-wall of the skull just behind the articular surface for the latter cartilage. Behind this again and close to it is a small separate articular surface for the first branchial arch. The succeeding branchial arches are all connected with the anterior vertebral plate. In *Urolophus testaceus* the articulations between the branchial arches and the anterior vertebral plate are the same as in *Trygon*; but the hyoid articulates wholly with the hyomandibular near its proximal end, and has no direct connection with the skull. In both species the copularia of the hyoid are narrow calcified cartilages, which are directed from the ventral mesial forwards and slightly inwards; at their anterior ends these are connected together by a slender bar which in *Urolophus* consists of a single cartilage, while in the specimen of *Trygon pastinaca* examined there are three separate pieces; this rod represents the hyoid copula. In *Urolophus* there is a small mesial cartilage between the middle of this hyoid copula and the anterior end of the basi-branchial plate; this may represent a separate copula belonging to the first branchial arch;† it was not found in *Trygon*. In both species the ventral ends of the ventral mesials of the hyoid and of the first branchial arch are completely coalescent. In *Trygon* the most dorsal and most ventral of the branchial rays on each arch are broadened out into thin lamellæ, which extend over a number of the others; those seem to be the representatives of the external branchial arches found in the Selachioidei.

In the anatomy of the soft parts the following are the most important points to be observed. The liver in both these genera is

* On p. 102 of the paper referred to 'hyoid' has been inadvertently printed for 'hyomandibular' in the second line from the top of the page.

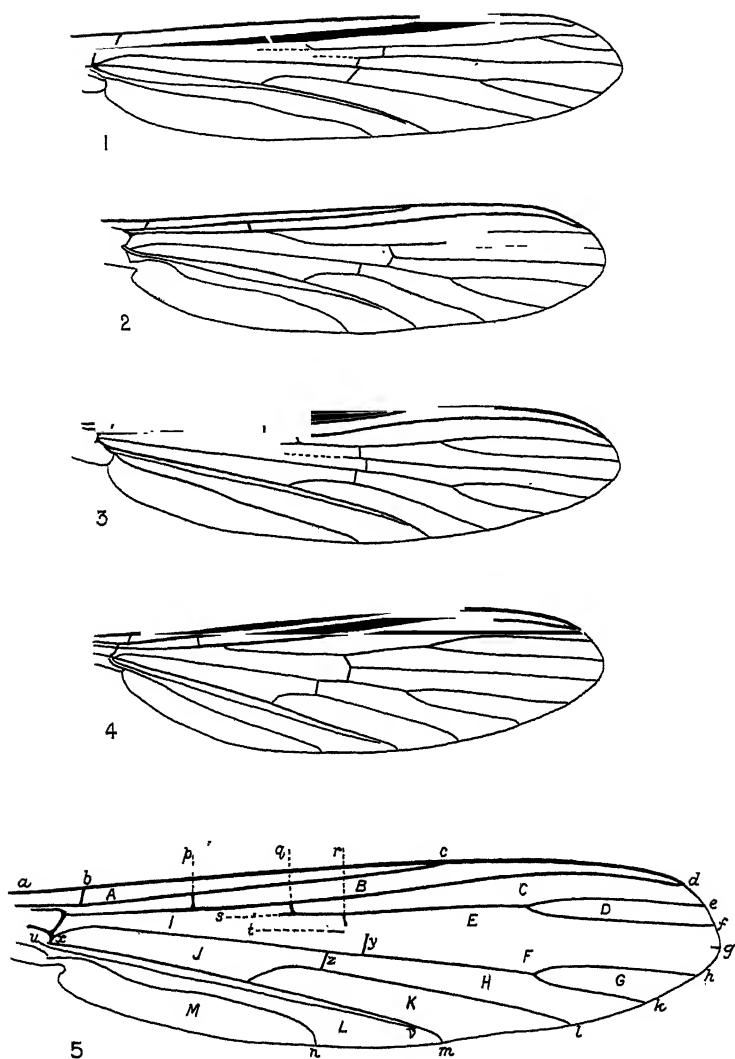
† A similar rudimentary copula occurs in a corresponding position in *Spinax* and *Cestracion* (Gegenbaur, "Das Kopfskelet der Selachier," p. 141, Taf. XVIII. fig. 6, and Taf. XIX. fig. 3.)

only divided into two lobes.* There is a small but distinct mesentery reflected from the dorsal abdominal wall far forwards where it is continuous with the mesogaster, down to the anterior end of the large intestine. This contains the mesenteric, splenic and pancreatic arteries, whose highly elastic walls make up a considerable part of the substance of the mesentery. The mesogaster is short, not extending back on to the stomach itself, but stopping short at its cardiac end. The mesorectum has intimately connected with it at the sides, in the female the mesoaria, in the male the mesorchia.

In the brain of *Urolophus* the only specially noteworthy point is the immense relative size of the cerebellum, the anterior prolongation of which, somewhat unsymmetrically developed, overlaps not only the optic lobes and the thalamencephalon, but to some extent the cerebrum, while the posterior covers over the whole of the medulla oblongata.

Both *Urolophus* and *Trygon* are viviparous. In *Urolophus testaceus* the left oviduct alone is functional. In a pregnant specimen there is a large uterine enlargement, the walls of which are beset with numerous very long filiform villi richly supplied with blood-vessels. This contains ordinarily only one embryo, though in one instance at least I have found two. Of these the most remarkable peculiarity in the Selachoid stage, and later when the pectoral fins are beginning to resemble those of the Ray—is the very great length of the external gills, which are as long as, or longer than, the body. They become intertwined with the long vascular uterine villi, and it seems not unlikely that their special development may be correlated with the existence of an accessory function—that of absorbing matter transuding from the vessels in the villi; since in this as in another viviparous Elasmobranch (*Pristiophorus cirratus*), some of the stages in which I have had the opportunity of examining, there is a marked increase in weight discernible when the fully-developed embryo is compared with the earlier stages plus the yolk sac.

* In the liver of *Myliobatis*, which is likewise two-lobed, there is to be observed a curious arrangement which I have not noticed elsewhere. This is the restriction of any lateral movement by means of two ligamentous bands, one passing from the ventral body wall to the right (larger) lobe of liver about the middle of its length, and the other from the lateral wall to near the point of insertion of the first.



DIPTERA OF AUSTRALIA.

BY FREDERICK A. A. SKUSE.

PART V.—THE CULICIDÆ.

(PLATE XL.)

The Australian species of this family are numerous, but like the other small Diptera of the country have never been much noticed. Up to the present time nine species of *Culex* and one of *Anopheles* are recorded. Of the former I regard *C. camptorhynchus*, Thomson, as synonymous with *C. alboannulatus*, Macquart; and *C. tinendus*, Walker, recorded in that author's "Notes on Diptera and lists of Species (1874)," appears to me to have been named only, for I have looked for it in vain amongst his published descriptions. In the present paper one species of *Megarrhina*, thirteen of *Culex*, four of *Anopheles*, and one of *Aedes* are described as new, while one species of *Culex*, which is wide-spread in the country, is dubiously regarded as an introduced species, the total amounting to twenty-eight. There are beyond doubt many more species yet to be discovered, and it is not at all certain that even all those prevalent in the neighbourhood of Sydney are completely exhausted, more particularly as a new well-marked species was found here just before the completion of the present contribution.

A few years since the Hon. William Macleay named, and drew up descriptions of, a few of the species represented in his collection; these names I have in all cases retained.

The Culicidæ constitute the second family of the sub-division Polyneura, and are divided into two sub-families, the CULICINA (including *Megarrhina*, *Culex*, *Anopheles*, and *Aedes*), and the CORETHRINA (including *Corethra* and *Mochlonyx*). *Sabethes* and *Psorophora*, both established by R. Desvoidy, are regarded as

synonymous with *Culex*, while *Plettusa*, a genus formed by Philippi (V. z-b. G. Wien, 1865, p. 597, taf. xxiii, fig. 2) for the reception of some South American insects which that author referred to this family, is regarded by Baron Osten-Sacken as identical with *Geranomyia* of the Tipulidæ (Mon. Dipt. N. America, Part IV., Tipulidæ, 1869, p. 79).

These insects have a cosmopolitan range; only *Mochlonyx*, with two or three species, appears at present to be confined to Europe, but it has possibly been overlooked in other countries. The brilliant species belonging to *Megarrhina*, although few in number, are widely scattered, being represented in North and South America, the West Indies, North and South Asia, the Eastern Isles, and in Australia. The typical genus *Culex*, comprising the true mosquitoes, has a world-wide dissemination, and includes some 160 described species; in Europe from extreme north to south about 30 species are known, and the same number are recorded from both North and South America, of which one species, *C. annulatus*, is common to the former two continents; two species stand recorded from Mexico and an equal number from the West Indies. In Southern Asia and the Eastern Isles about 25 species are known to occur, eleven have been named from Africa, four have been discovered in New Zealand, and in the present contribution no less than 21 are recorded for Australia. One species appears to have been introduced into this country, judging from the accounts of old colonists, and is possibly a variety of *C. ciliaris*, Linn. It may have been imported from Europe in the water-tanks belonging to some of the old sailing vessels. As the railway lines extend so this mosquito reaches portions of the country often hitherto exempt from it, and it has been, and is being, communicated to other places along the coasts by water traffic. Certain descriptions in Meigen's and Macquart's works fit this species fairly well as far as they go, but are much too brief and unsatisfactory to be of much service for conclusive identification; and none of the more modern works giving descriptions of Culicidæ being available to me, I have been compelled to simply give the description of this species without

attaching any name, in the hope that some foreign Dipterologist may be able to identify it. It is *par excellence* the domestic nocturnal pest of all the Australian colonies, rivalling its other wingless co-operators in bloodthirstiness. To residents who have been in the country a considerable time, the dreary hum of this evil genius of the sleeping-chamber is generally considered more troublesome than its operation of phlebotomy, while to a new-comer the inflammation caused by the latter is accompanied with extreme irritation.

The genus *Anopheles*, although numbering but few species,—less than thirty,—is widely diffused. Five species are prevalent in Europe, seven in North America of which latter no less than three are common to it and Europe, one in the West Indies, at least four occur in South America, two in Southern Asia and the Eastern Isles, and lastly five is the small and undoubtedly unrepresentative total of Australian species. The genus *Aedes* seems very limited in numbers; two species are found in Europe, the same in North America, and one is now described from Australia.

Of the remaining two genera belonging to the sub-family CORETHRINA, very little is known out of Europe; *Corethra* has two known species in North and one in South America, and about eight species appear on the European list. *Mochlonyx*, as already mentioned, seems to be restricted to two or three species, all of which are European.

The habits and young stages of the gnats or mosquitoes are so well known that it is needless for me to recount them here. The perfect insects occur about Sydney all the year round, but very abundantly during the summer months; certain species conceal themselves during the day, coming out in myriads in the evening, and returning to some suitable retreat again before daybreak; others are day-fliers and cause much annoyance to travellers in the bush, especially as they sometimes appear in dense clouds. Many species may be obtained by disturbing bushes, others are commonly found in caves, hollow trees, &c., of course more particularly

those situated in close vicinity to stagnant water and marshy places, where the insects may be frequently observed drinking.

I must take this opportunity of gratefully acknowledging the assistance derived from the Hon. William Macleay's MSS., which were freely handed to me for my use; also the help from Drs. J. and T. L. Bancroft and Mr. Henry Tryon, of Brisbane; Mr. A. G. Hamilton, of Mt. Kembla, Illawarra; Mr. De Meyrick, of Penrith; and Mr. George Masters, in obtaining for me valuable material for description.

Genus I. MEGARRHINA, Desv.

Megarrhina, Desvoidy, Essai sur les Culicides, Mém. Soc. d'Hist. Nat. de Paris, III. 1827, p. 412; Macquart, Diptères Exotiques, Vol. I. 1838, p. 32, pl. 1, fig. 1.

Proboscis bent downwards about the middle of its length; in the ♂ almost the length of the body, in the ♀ a little shorter. Palpi in the ♂ a little longer than the proboscis; first joint short; second, third, and fourth elongate, cylindrical, of equal length except the second, which is a little shorter; in the ♀ of rather less length than the proboscis, with five cylindrical joints of nearly equal length. Antennæ in the ♂ with bushy plumes, the second joint a little elongate; in the ♀ the joints elongate, with a few long hairs at the base. Prothorax projecting from each side in the form of a scale; bordered with hairs in the ♂, naked in the ♀. Abdomen: the last three segments bordered laterally with hairs in the ♂, the copulatory organ accompanied by two appendages terminating in a point. Wings: first marginal cell very small; transverse veins very remote from the petiolated cells.

Obs.—The above is derived partly from Macquart's synoptical table on p. 29, and partly from the additional characters enumerated by him on p. 32, drawn from the sexes of *M. hæmorrhoidalis*, the type of this genus. I would add the following observations with reference to the species hereafter described, more particularly as it does not correspond in every particular with Macquart's description or figure.

Head small, subglobose, free from the thorax. Eyes lunular, emarginate at the insertion of the antennæ, more closely approximate above in the ♀ than in the ♂. Palpi* in the ♂ a little shorter than the proboscis, densely clothed with scales, six-jointed; the first two joints very short, the third, fourth, and fifth elongate, cylindrical, the fifth somewhat longer than the third and the fourth somewhat longer than the fifth, the sixth joint nearly twice the length of the fifth, acuminate. Proboscis in both sexes equal in length to the abdomen and half the thorax, densely clothed with scales. Antennæ 2-+12-jointed. Thorax ovate, much more pointed anteriorly than in *Culex*; prothoracic lobes bordered with hairs in both sexes; scutellum more oblong than in *Culex*. Abdomen flattened, sub-claviform, with eight segments, the last three segments in both sexes densely bordered laterally with long hairs. Legs long, slender, minutely spinulose; coxæ short. Wings longer than the abdomen, incumbent in repose; auxiliary, first longitudinal, and basal half of the fifth longitudinal vein densely covered with more or less turbinate scales. Humeral cross-vein and sub-costal cross-vein present, the latter situated at the middle of the auxiliary vein. Marginal cross-vein present, the second longitudinal vein appearing before it in the first basal cell in an ill-defined manner, like an incrassation of a wing-fold. Second longitudinal terminating in a very small short fork, with a cuneiformly narrowed base, both branches bent slightly anteriorly at their extreme tips in the ♂. Third longitudinal vein not originating from the second longitudinal vein, joined to it by a supernumerary cross-vein, and starting at the middle cross-vein, which is situated much before the latter and exactly opposite the posterior cross-vein.† Fourth longitudinal vein with a long fork,

*The palpi and antennæ of the only specimen of the ♀ I have seen are broken off near the base.

†In both sexes the third longitudinal vein appears to traverse the first posterior cell to its base as a very indistinct incrassation of a wing-fold, but in the specimen of the ♀ before me the third longitudinal is covered with scales for some distance before the middle cross-vein.

cuneiformly narrowed towards the base, the anterior branch slightly bent posteriorly at its extreme tip in the ♂. Fork of the fifth longitudinal vein very long, its base situated some distance before the sub-costal cross-vein. Sixth longitudinal vein somewhat sinuous, joining the margin beyond the posterior cross-vein, in the ♀ opposite the supernumerary cross-vein (Pl. XL, fig. 1).

As far as I am aware only eight species of this very distinct genus have been hitherto described—one from North and another from South America, one from the West Indies, four from Southern Asia and the Eastern Isles, and one from Amur, Northern Asia.

191. *MEGARRHINA SPECIOSA*, sp.n. (W. Macleay, MSS.).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·160 inch | ... | 4·06 millimètres. |
| Expanse of wings..... | 0·330 × 0·060 | ... | 8·39 × 1·54 |
| Size of body | 0·440 × 0·080 | ... | 11·17 × 2·02 |

Antennæ brown, a little more than half the length of the palpi; basal joint black, with hoary reflections; second joint more than twice the length of the third, ornamented with some beautifully iridescent scales, the whorl of very long hairs situated about $\frac{1}{3}$ from the apex. Head covered with brilliant margaritaceous scales, chiefly reflecting green; in a certain light appearing brown with a bright pale greenish line round the hinder border of the eyes. Proboscis (0·300 in.) somewhat longer than the palpi (0·285 in.), deep metallic blue, with a purplish reflection before the bend, brown beyond. Palpi deep metallic blue, with purplish reflections, the third joint ringed with golden-yellow at the apex (this is much more distinct underneath), and the fourth joint with a broader ring of the same beyond the middle. Thorax brown, the lateral margins and prothorax densely covered with pale greenish scales, the latter with long brown hairs; hinder margin and scutellum richly adorned with brilliantly iridescent scales and long brown hairs; pleuræ with a naked brown stripe from the origin of the wings to the scale-like prothoracic projection, below this densely covered

with silvery scales; metanotum brown, naked. Halteres ochre-yellow. Abdomen about twice the length of, but narrower than, the thorax, flat, deep metallic blue, except the first segment, the latter green with a yellow patch on each side; fifth segment showing some golden-yellow laterally, sixth and eighth segments ornamented with a strong tuft of golden hair laterally, the seventh with black tufts; all the segments slightly bordered with golden hairs laterally; the first to third and fifth to seventh segments golden-yellow beneath with a metallic blue longitudinal stripe down the centre, fourth entirely metallic blue, and the terminal one brilliant pale green. Coxæ clothed with silvery scales. Femora and tibiæ metallic violet, the former golden-yellow beneath. In the intermediate- and fore-legs (the hind legs wanting below the tibiæ in the specimen before me), the first joint of the tarsi white except at the base, and the second also except at the apex; the rest metallic violet. Wings longer than the abdomen, with a pale brownish tint anteriorly and along the fifth longitudinal vein, veins pale brown, cilia pale, and short; weak reflections. Auxiliary vein joining the costa almost opposite but somewhat beyond the tip of the posterior branch of the fifth longitudinal; sub-costal cross-vein distinct, situated about midway between the origin of the anterior branch of the fifth longitudinal vein and the origin of the second longitudinal; fork of the latter very small, the tips of the branches slightly bent anteriorly; supernumerary cross-vein equal in length to the middle cross-vein; posterior cross-vein more than twice the length of the latter, rather sinuose; tip of the anterior branch of the fifth longitudinal vein joining the margin opposite the middle of the second posterior cell; a very prominent wing-fold running close to the posterior side of the fifth longitudinal for the whole of its length and another on the anterior side in the anal cell.

Hab.—Port Denison, Queensland (Masters).

Obs.—The above is taken from a single ♂ specimen whose hind-legs are lost beyond the tibiæ, and whose thorax is perhaps partly denuded. There is also a ♀ specimen in the Macleay collection taken by Mr. Masters about twenty years ago near Sydney; it

seems to me to belong to this species, but is too abraded to satisfactorily decide. I do not know of any other captures of specimens of this genus in Australia, and I have never yet had the fortune to see a living example of these evidently scarce, and extremely magnificent insects.

Genus 2. *CULEX*, Linn.

Culex, Linnæus, Syst. Nat. 1735; Fauna Suecica, 1761; Geoffroy, Hist. n. Ins. 1764; Fabricius, Gen. Ins. 1776, p. 203; Ent. Syst. 1794; Latreille, Gen. Cr. et Ins. IV. 1809, p. 246; Meigen, Syst. Besch. i. 1818, p. 1; Macquart, S. à B. I. 1834, p. 33; Curtis, Brit. Ent. Vol. XII. 1835, p. 537; Zetterstedt, D.Sc. 1850; Walker, I. B. III. 1856, p. 243; Schiner, F.A. II. 1864.

Head small, almost globose, situated moderately deep in the thorax. Eyes lunular, emarginate at the insertion of the antennæ, approximate above. Ocelli wanting. Palpi porrected, clothed with scales; longer* than the antennæ in the ♂, six-jointed, the last three joints hairy; first two joints short, third long and slender, fourth the longest, clavate, fifth and sixth about equal length, the fifth longer than the sixth or the latter longer than the fifth; in the ♀ very short, five-jointed; first joint rather longer than the second, membranous at the base, second small, third clavate, fourth longest and stoutest, fifth extremely small, nipple-shaped or gemmiform. Proboscis long, slender, densely clothed with scales, straight or a little bent. Antennæ porrected, about the length of the thorax, shorter than the proboscis, 2-+12-jointed, first joint of the scape large and globose; in the ♂ second rather longer and stouter than the first flagellar joint, whorled with very long hair towards the apex; the ten following flagellar joints short, fusiform, whorled in the middle with very long hair, the penultimate joint greatly elongated beyond the whorl, terminal joint long, shorter than the last, slender like the continuation of the last, with a few moderately

*Meigen, Macquart and Curtis all say "longer than the proboscis" in the ♂, but I do not find this to be the case in every species.

long hairs forming a verticil at the base, clothed with short hairs ; in the ♀ the second joint of the scapus stouter and rather longer than the following joints, sparsely verticillate-pilose ; flagellar joints gradually increasing in length, slender, cylindrical, rather densely covered with a short pubescence, sparsely verticillate-pilose at the base. Thorax longish-ovate, arched ; scutellum small ; metathorax steep. Halteres small. Abdomen slender, almost cylindrical, with eight segments in both sexes ; in the male terminating with holding-forceps ; the ovipositor of the ♀ with short terminal lamellæ. Legs long and slender, especially the hind pair ; coxæ short ; tibiæ spinulose ; tarsi long, metatarsal joint very long, terminal joint shortest in the hind-legs ; unguis small, acute. Wings longer than the abdomen, narrow, elongate, lanceolate, densely ciliated, the veins covered with chiefly linear scales ; incumbent in repose. Humeral cross-vein and sub-costal cross-vein present, the latter situated before the middle of the auxiliary vein. Marginal cross-vein wanting. Second longitudinal vein starting from the first longitudinal vein a short distance beyond the sub-costal cross-vein, and at a point before half the length of the wing, terminating in a long narrow fork, the branches running parallel. Third longitudinal vein originating from the second longitudinal at a point much nearer to the base of the fork than to the origin of the latter. Middle cross-vein situated close to the base of the third longitudinal vein. Fourth longitudinal vein terminating in a broader and rather shorter fork than that of the second longitudinal ; their bases more or less opposite. Posterior cross-vein situated more or less before, or almost in a line with, the middle cross-vein. Fork of the fifth longitudinal nearly as broad as that of the second and fourth longitudinal veins taken together, as long or a little longer than that of the former, its base generally situated at a point about mid-way between the base of the second longitudinal and the tip of the sixth longitudinal, sometimes beyond. Sixth longitudinal vein slightly arcuated, joining the wing margin before the posterior cross-vein (Pl. XL., fig. 2).

A. TARSAL JOINTS WITH PALE RINGS.

192. *CULEX ALTERNANS*, Westwood.

Culex alternans, Westw. Ann. Soc. Entom. France, Vol. IV. 1835, p. 681; Trans. Ent. Soc. London. Part III. 1881, p. 384.

Pale brownish; abdomen ringed with white; wings hyaline; veins, especially the costal, reddish, adorned with brown scales except in the stigmatic region, where white scales appear, with others with black and white arranged alternately; legs reddish, with brown scales; femora before the apex, towards the tibiæ and behind the middle, with the genua and tarsi ringed with white. Length of the body (probosc. excl.) 4 lines; expanse of the wings 8 lines.

Hab.—New Holland. Hopean Mus. Oxford.

193. *CULEX HISPIDOSUS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·120 inch | ... | 3·04 millimètres. |
| Expanse of wings..... | 0·240 × 0·045 | ... | 6·09 × 1·13 |
| Size of body..... | 0·300 × 0·045 | ... | 7·62 × 1·13 |

Antennæ pale ochre-yellow, the verticils sericeous, almost hoary at the tip when viewed in a certain light, not quite $\frac{2}{3}$ the length of the palpi; joints of the scapus more or less covered with white scales. Head adorned with a mixture of erect yellow and white scales and long yellow hairs; the eyes bordered with a compact line of white decumbent scales. Proboscis pale ochre-yellow, brown at the base and black at the extremity, about $\frac{5}{8}$ the length of the palpi. Palpi pale ochre-yellow, imperfectly covered with white scales, the first two joints and tips of the remaining joints with brown scales, hairs pale ochre-yellow, sericeous; sixth joint considerably longer than the fifth. Thorax densely covered with scales, some very long and almost erect, appearing grey to the naked eye, but under a lens proving to be chiefly white scales variegated with indistinct longitudinal stripes and patches of very pale yellow scales, the whole interspersed with long yellow hairs; a roundish patch of yellow scales under each humerus, a narrow

median longitudinal stripe appearing only to reach the middle of the thorax, and lastly a short lateral stripe beginning opposite the termination of the median one, underneath each humeral patch, and extending to the scutellum (in a certain light these short stripes appear to form a fork with the median stripe); pleuræ ochraceous-brown, almost covered with white decumbent scales; scutellum adorned with long white scales and very long yellow hairs; metanotum ochraceous-brown, almost hoary when viewed at a certain obliquity. Halteres pale ochre-yellow. Abdomen whitish, two and a half times the length of the thorax, densely clothed with long white decumbent and erect scales and long yellow hairs, each segment bordered posteriorly with a broad band of pale yellow, in the last two or three segments apparently represented by two lateral patches; beneath covered with white decumbent scales, the segments posteriorly bordered with bicoloured scales, the basal half of each being pale yellow and the apical portion umber-brown; forceps densely covered with scales and long yellow hairs, basal joints brown, the terminal hooks yellow, very long and incurved. Legs pale ochre-yellow, densely covered with long semi-erect scales interspersed with long yellow hairs, making them appear more than twice their real thickness; coxæ brownish-ochraceous, more or less covered with white scales, the remaining joints ringed with white and bicoloured scales alternately, the colours of the latter as on the abdomen; the dark rings on the femora and tibiæ much broader than the white ones, both about equal width, or the latter somewhat wider, on the tarsi. Wings about the length of the abdomen, hyaline, veins yellow covered with a mixture of white and bicoloured scales (similarly coloured to the above-mentioned), the marginal cilia in grey and white patches alternately; rather weakly iridescent. Auxiliary vein joining the costa opposite the tip of the posterior branch of the fifth longitudinal vein; sub-costal cross-vein much nearer the origin of the second longitudinal vein than to the humeral cross-vein; middle cross-vein a little shorter than the posterior cross-vein, almost in line with one another, situated over the middle of the posterior branch of the

fifth longitudinal vein; both these cross-veins and the base of the second longitudinal slightly clouded with pale fuscous; anterior branch of the fifth longitudinal vein originating a little before the tip of the sixth longitudinal, and its tip joining the posterior border opposite the base of the second posterior cell; second posterior cell somewhat wider than the first sub-marginal cell, and half its length.

Hab. — Hexham Swamps, near Newcastle and Richmond (Skuse), Mt. Kembla, Illawarra, N.S.W. (Mr. A. G. Hamilton). January.

Obs.—This is a day-flying bush mosquito, and is by far the most beautiful and most distinct of all the Australian species of *Culex* known by me. It is strange that I have not taken a specimen of the ♀, more particularly as the latter sex usually requires the least looking for. The species has long been known in various parts of New South Wales under the name of "Hexham grey."*

194. CULEX VITTIGER, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·100 inch | ... | 2·54 millimètres. |
| Expanse of wings..... | 0·220 × 0·050 | ... | 5·58 × 1·27 |
| Size of body..... | 0·240 × 0·045 | ... | 6·09 × 1·13 |

Antennæ brown, nearly $\frac{5}{7}$ the length of the proboscis; first joint of the scapus and basal half of the second, ochraceous. Head densely clothed with yellow scales and hairs. Proboscis brown at the base, ochraceous towards the middle, dusky towards the tip, rather more than four times the length of the palpi. Palpi ochraceous, tip of the fifth and last joint dusky, densely covered with rather long hairs. Thorax black, with five vittæ of whitish scales, the median one furcate a short distance before the

* Since the above was written I have been fortunate enough to receive specimens of the ♀ from Queensland through the kindness of Mr. Henry Tryon of Brisbane, who obtained them for me at Breakfast Creek. It is there called the "Scotch-grey." The ♀ possesses very long palpi, these being rather more than half the length of the proboscis.

scutellum, its branches coalescent with the next lateral vittæ: all the vittæ are equidistant and all beset with long golden-yellow hairs posteriorly; the outside ones on the lateral margin rather wider than the rest, joining the next before reaching the anterior margin; pleuræ with some large patches of white scales; scutellum densely covered with white scales and long golden-yellow hairs. Halteres yellow. Abdomen twice the length of the thorax, densely clothed with whitish scales; terminated with two small elongate deep brown lamellæ. Legs rather robust. Coxæ brown, with white scales. Femora, tibiæ and tarsi pale ochre-yellow, every joint tipped with black. Wings hyaline, veins yellowish-brown, cilia pale, sericeous; brilliant margaritaceous reflections. Auxiliary vein joining the costa before the tip of the anterior branch of the fifth longitudinal vein; sub-costal cross-vein situated nearer the base of the second longitudinal than to the humeral cross-vein; middle cross-vein considerably longer than the posterior cross-vein, the former situated a little in advance of the latter, both very little before the tip of the posterior branch of the fifth longitudinal; anterior branch of the latter originating a little before the tip of the sixth longitudinal vein, and joining the margin opposite the base of the second posterior cell.

Hab.—Port Denison and Wide Bay, Queensland (Masters); Gosford, N.S.W. (Skuse). February.

Obs.—Probably occupying the brush country all along the east coast.

195. *CULEX OCCIDENTALIS*, sp.n. (W. Macleay, MSS.)

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·090 inch | ... | 2·27 millimètres. |
| Expanse of wings..... | 0·200 × 0·050 | ... | 5·08 × 1·27 |
| Size of body..... | 0·200 × 0·040 | ... | 5·08 × 1·01 |

Antennæ almost cinereous, about $\frac{4}{5}$ the length of the proboscis; the first joint of the scapus and basal half of the second ochraceous. Eyes bordered behind with a narrow line of golden-yellow scales,

followed by a band of deep reddish-brown, the back of the head densely covered with golden-yellow scales. Proboscis six times the length of the palpi, brown, darker at the base and towards the extremity. Palpi dusky brown, the fourth joint with a small ring of white at the base, and the terminal joint white. Thorax deep reddish-brown (when denuded), densely covered with golden-yellow scales, pleuræ reddish-brown, mottled with several patches of whitish scales; scutellum testaceous, with golden-yellow scales and long brown setæ; metanotum reddish-brown. Halteres with the club dusky-brown, stem ochre-yellow. Abdomen twice the length and not quite the width of the thorax, dark brown, each segment with a narrow band of whitish anteriorly, and fringed with long golden-yellow hairs; beneath covered with whitish scales, the segments bordered posteriorly with a narrow band of brown. Legs dark brown; the coxæ and basal half of the femora more or less dusted with whitish or yellowish scales, the apex of latter slightly tipped with white; also first, second, and third joints of the tarsi ringed with white at the base. In the hind-legs the tibiæ about $\frac{1}{3}$ longer than the metatarsi. Wings longer than the abdomen, hyaline, the veins thickly covered with long, slender, brown scales, cilia grey; brilliant reflections. Auxiliary vein reaching the costa opposite the tip of the posterior branch of the fifth longitudinal vein; sub-costal cross-vein situated a short distance before the origin of the second longitudinal vein; middle cross-vein almost imperceptibly longer than the posterior cross-vein, the former situated in front of the latter a distance equal to its length; first sub-marginal cell considerably longer and narrower than the second posterior cell, its base being almost opposite, but slightly before the base of the latter; anterior branch of the fifth longitudinal vein originating opposite a point nearer the tip of the sixth longitudinal vein than the base of the second longitudinal, and joining the margin opposite the middle of the second posterior cell.

Hab.—King George's Sound, Western Australia (Masters). A single specimen.

196. *CULEX VIGILAX*, sp.n.

| | | | |
|----------------------------|---------------|-----|-------------------|
| ♀.— Length of antennæ..... | 0·090 inch | ... | 2·27 millimètres. |
| Expanse of wings..... | 0·170 × 0·050 | ... | 4·31 × 1·27 |
| Size of body..... | 0·200 × 0·045 | ... | 5·08 × 1·13 |

Antennæ dark brown, $\frac{3}{4}$ the length of the proboscis; joints of the scapus more or less ochraceous-brown or ochraceous. Head covered with dark brown scales, indistinctly mottled with yellow scales. Proboscis about seven times the length of the palpi, very dark brown or black, ochreous-yellow beneath from just beyond the base to a little beyond the middle. Palpi dark brown, the last joint with white scales at the apex. Thorax very deep brown or black, densely covered with deep brown or black scales, mottled with small patches of golden-yellow scales; pleuræ very deep brown, spotted with a few small patches of white scales; scutellum deep brown, sometimes tinged with testaceous, with golden-yellow scales and setæ; metanotum deep brown, nearly black, more or less testaceous at the sides. Halteres entirely ochre-yellow. Abdomen scarcely twice the length of the thorax, covered with violet-black scales, each segment except the first bordered anteriorly with a narrow band of very pale yellowish or whitish scales, the first segment set with numerous golden-yellow setæ and sprinkled with white scales; all segments with a small patch of pure white scales laterally below the extremities of the anterior bands; venter covered with very pale yellowish or whitish scales; lamellæ of the ovipositor deep brown. Coxæ light brown, with white scales. Femora violet-black above and at the apex, sprinkled with yellowish or whitish, beneath yellowish or whitish, nearly wholly violet-black in the fore-legs; genua bright golden-yellow. Tibiæ violet-black, sprinkled with yellowish scales. Tarsi violet-black, each joint with a narrow ring of white at the base, rather indistinct on the last two joints of the fore- and intermediate-legs. In the hind-legs the metatarsus rather more than $\frac{2}{3}$ the length of the tibiæ. Wings longer than the abdomen, hyaline, with a pale yellowish tint anteriorly, veins covered with slender brown scales, cilia grey; rather brilliant reflections. Auxiliary vein joining the costa a little

before the posterior branch of the fifth longitudinal fork; middle cross-vein longer than the posterior cross-vein, situated a short distance in front of the former; first sub-marginal cell somewhat longer and slightly narrower than the second posterior cell, the base of the former situated a little beyond the base of the latter; anterior branch of the fifth longitudinal vein originating opposite a point about mid-way between the origin of the second longitudinal and the tip of the sixth longitudinal vein, joining the posterior border opposite the middle of the second posterior cell.

Hab.—Gosford, Kiama, and National Park, N.S.W. (Skuse); Brisbane, Queensland (Dr. J. Bancroft and Mr. H. Tryon). November to February.

197. *CULEX ALBOANNULATUS*, Macquart.

Culex alboannulatus, Macq., *Diptères Exotiques*, 4th Suppl. 1850, p. 10; *C. camptorhynchus*, Thomson, *Kongliga Svenska Fregatten Eugénies Resa omkring Jorden*, Zool. Diptera, 1868. p. 443.

♂.—Length of antennæ..... 0·080 inch ... 2·02 millimètres.
 Expanse of wings..... 0·165 × 0·035 ... 4·18 × 0·88
 Size of body..... 0·210 × 0·035 ... 5·33 × 0·88

♀.—Length of antennæ..... 0·085 inch ... 2·14 millimètres.
 Expanse of wings..... 0·170 × 0·040 ... 4·31 × 1·01
 Size of body..... 0·210 × 0·040 ... 5·33 × 1·01

♂ and ♀.—Antennæ in the ♂ light brown, the hairs pale brown sericeous, a little more than $\frac{2}{3}$ the length of the palpi; the first joint of the scapus black; in the ♀ dusky brown, $\frac{3}{4}$ the length of the proboscis, the joints of the scapus testaceous. Head brown, more or less covered with golden-yellow and white scales, sometimes with patches of brown, generally with a small patch of white on each side; sparingly pilose. Proboscis in the ♂ somewhat longer

than in the ♀, six times the length of the palpi; generally black or deep brown, sometimes a little whitish or yellowish beneath at middle. Palpi black or deep brown; in the ♂ the last four joints ringed with white at the base, in the ♀ the fourth joint with a slight ring of white at the base and the minute terminal joint entirely white. Thorax very deep fuscous or reddish-brown (when denuded), densely covered with brownish-golden scales, often very indistinct, traversed by five very fine naked lines, which are made somewhat more prominent by white scales which give the thorax a silky appearance:—a median longitudinal line, never bordered with pale scales, terminating before the scutellum in an almost triangular bare space marked with two very small patches of white scales anteriorly and one near each corner at the base; a short oblique line at the humeri and a lateral, almost hooked-shaped, one running from the scutellum for rather more than half the length of the thorax then turning towards the lateral margin, both bordered by a slight line of white scales and the last with a small patch of white at the beginning of the bend in front; a larger more or less distinct, indeterminable patch above the origin of the wings; pleuræ fuscous or reddish-brown, marbled with small patches of white scales; some brown hairs about the origin of the wings; scutellum dark brown or testaceous-brown, adorned with three patches of white scales, and fringed with long brown hairs; metanotum brown. Halteres fuscous-brown, the stem often entirely testaceous. Abdomen in the ♂ more than twice the length of the thorax, in the ♀ about twice the length; black or deep brown, with an olivaceous tinge; in the ♂ each segment very distinctly bordered anteriorly with a narrow band of white, in the ♀ this border is very slight, sometimes only occurring in the middle of the anterior margin, or entirely absent, generally with a distinct white spot laterally on each; the segments densely fringed posteriorly and laterally with pale yellowish hairs more dense and stiff in the ♂ than in the ♀, particularly at the sides; venter more or less covered with white scales; ♂ forceps and lamellæ of the ♀



ovipositor deep brown. Coxæ brown or fuscous, with white scales and pale yellow hairs. Femora in the ♂ covered with violet-black scales, more or less spotted with pale yellowish or whitish scales, especially at the base and beneath, and slightly tipped with yellow or white at the apex; in the ♀ usually pale yellowish or whitish for $\frac{2}{3}$ of their length, violet-black for the remaining third, and more or less so along the upper side, usually with a distinct ring of white before the extremity, the extreme tip and genu always slightly yellow or white. Tibiæ and tarsi violet-black or violet-brown, the former fringed with erect hairs, the latter in the fore- and intermediate-legs with the first three joints very slightly ringed with white at the base, in the hind-legs the first four, and in the ♂ sometimes all the joints, with a broad white ring at the base. In the hind-legs the tibiæ about $\frac{1}{2}$ longer than the metatarsi. Wings the length of the abdomen in the ♂, longer and wider in the ♀, hyaline, the veins covered with dark fuscous-brown scales, cilia greyish. Auxiliary vein reaching the border opposite the tip of the posterior branch of the fork of the fifth longitudinal vein; middle cross-vein rather longer than the posterior cross-vein, situated beyond the latter a distance equal to its length; first sub-marginal cell rather longer and much narrower than the second posterior cell, its base lying somewhat beyond that of the latter; anterior branch of the fifth longitudinal vein as in the last species.

Hab.—New Holland, eastern coast (Macquart); Sydney (Thomson), common, also Woronora and Blue Mountains, N.S.W. (Masters and Skuse). October to January.

Obs.—This species seems variable in the intensity of its colouring, while in old specimens the five thoracic lines are frequently not distinguishable. The above description is drawn from a large series of fresh specimens. I have no doubt in my mind about the identification and synonymy of the insect.

Macquart points out that this species approaches *C. annulatus*. It differs principally, however, in the markings of the thorax, in the lack of spots on the wings, and in its smaller size. Thomson

seems to lay some importance on the "curved proboscis" through which he compares this species with *C. toxorhynchus*, but it cannot be regarded as structural, for I find straight and curved probosces in both sexes of this and other species.

198. CULEX RUBRITHORAX, Macquart.

Culex rubrithorax, Macq., Diptères Exotiques, 4th Suppl. 1850, p. 9.

"♀. *Thorace testaceo. Abdomine nigro, incisuris albidis. Pedibus flavidis; tarsi fuscis albo-annulatis.*"

Proboscis tawny, black at the base and extremity, sometimes entirely black. Palpi black, tawny at the base. Front brown, with a grey pubescence. Antennæ black. Thorax reddish-testaceous (denuded). Abdomen black, more or less shining, with a greyish-white pubescence about the incisions. Legs rather pale tawny; posterior femora sometimes black within their posterior third; posterior tibiæ brownish-black; tarsi black, sometimes yellowish; the first three joints with a white ring at the base, narrow and sometimes indistinct to the anterior and intermediate pairs, large to the posterior. Wings rather limpid; veins normal, covered with small black hairs.

Five ♂ specimens, of which one has the tarsal rings nearly absent.

Tasmania. Long. $2\frac{1}{2}$ lines.

199. CULEX FLAVIFRONS, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.070 inch | ... | 1.77 millimètres. |
| Expanse of wings..... | 0.160 × 0.040 | ... | 4.06 × 1.01 |
| Size of body..... | 0.200 × 0.035 | ... | 5.08 × 0.88 |
| ♀.—Length of antennæ..... | 0.090 inch | ... | 2.27 millimètres. |
| Expanse of wings..... | 0.160 × 0.045 | ... | 4.06 × 1.13 |
| Size of body..... | 0.180 × 0.040 | ... | 4.56 × 1.01 |

♂ and ♀.—Antennæ in the ♂ light ochreous-brown, sericeous, about $\frac{2}{3}$ the length of the palpi; first joint of the scapus dusky-brown; in the ♀ dusky-brown, nearly the length of the proboscis; both joints of the scapus ochraceous-brown. Head densely covered with pale golden-yellow scales. Proboscis* dusky-brown, sometimes pale ochre-yellow towards the middle; in the ♂ somewhat shorter than the palpi; in the ♀ about six times the length of the palpi. Palpi dusky-brown; in the ♂ the fifth joint with an indistinct narrow ring of white at the base, in the ♀ the terminal joint white. Thorax reddish-brown (when denuded), densely covered with pale golden-yellow scales; pleuræ reddish-brown, spotted with several small patches of white scales; scutellum densely covered with pale golden-yellow scales and setaceous hairs; metanotum light reddish- or testaceous-brown. Halteres with the stem pale ochraceous and the club somewhat infuscated. Abdomen twice the length of the thorax, covered with violet-black scales, each segment bordered anteriorly with a narrow band of white, densely fringed with golden-yellow hairs; venter covered with white scales; ♂ forceps deep brown, with dense long golden-yellow hairs; lamellæ of the ♀ ovipositor deep brown. Coxæ pale reddish-brown or testaceous, with white scales. Femora covered with violet-black or violet-brown scales above at the apex, thickly powdered with white scales, white or pale ochre-yellow beneath; genua bright yellow. Tibiæ and tarsi violet-black or violet-brown, the tibiæ and metatarsi more or less covered with whitish or pale ochre-yellow scales beneath, and all the joints of the tarsi (indistinctly in the fore and intermediate pairs) ringed with the same at the base. In the hind-legs the tibiæ about $\frac{1}{2}$ longer than the metatarsus. Wings longer than the abdomen, pellucid, almost hyaline, with an almost imperceptible brownish tint, darker at the stigmatic region, the veins densely covered with violet-brown scales sparingly intermixed with yellowish scales, cilia brownish-grey. Auxiliary vein

*In one specimen the proboscis is almost wholly of a pale ochre-yellow colour.

reaching the costa opposite the tip of the posterior branch of the fork of the fifth longitudinal vein; middle cross-vein almost imperceptibly longer than the posterior cross-vein, situated beyond the latter a distance equal to rather more than half its length; first sub-marginal cell somewhat longer and distinctly narrower than the second posterior cell, its base lying slightly beyond that of the latter; anterior branch of the fifth longitudinal vein originating at a point about mid-way between the origin of the second longitudinal and the tip of the sixth longitudinal, joining the margin opposite the middle of the second posterior cell.

Hab.—Blue Mountains, N.S.W. (Masters); Victoria Park, Brisbane, one specimen (Mr. H. Tryon). November to January.

200. *CULEX ANNULIROSTRIS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.090 inch | ... | 2.27 millimètres. |
| Expanse of wings..... | 0.150 × 0.035 | ... | 3.81 × 0.88 |
| Size of body..... | 0.170 × 0.035 | ... | 4.31 × 0.88 |

Antennæ brown, the length of the proboscis; first joint of the scapus and basal half of the second joint testaceous. Head deep brown, nearly black, with yellow scales. Proboscis deep brown, nearly six times the length of the palpi, with a prominent broad ring of white in the middle one-third the length of the proboscis. Palpi black or deep brown, the third and last joints almost imperceptibly tipped with white. Thorax deep brown, rather densely covered with yellow scales and hairs; pleuræ deep brown, spotted with a few small patches of white scales; a little testaceous under the origin of the wings; scutellum somewhat testaceous-brown, with long yellow hairs; metanotum deep brown. Halteres brownish-ochraceous. Abdomen twice the length of the thorax, deep brown, nearly fuliginous; each segment bordered anteriorly with a narrow band of white scales and fringed posteriorly with golden-yellow hairs; underneath covered with white scales. Coxæ reddish-brown, with white scales. Femora deep brown above,

white beneath (in the fore- and intermediate- pairs the brown predominates), and just perceptibly white at the extreme apex; tibiae and tarsi sordid brown, with a yellowish-grey reflection, all joints, except the last tarsal joint, with a small ring of white at the base. In the hind-legs the metatarsi equal in length to the tibiae. Wings longer than the abdomen, hyaline, the veins thickly covered with brown scales, chiefly long and very slender, cilia brownish-grey. Auxiliary vein reaching the costa about opposite the tip of the posterior branch of the fifth longitudinal vein; middle and posterior cross-veins very pale, the former a little shorter than the latter and situated in front of it a distance equal to twice its length; first sub-marginal cell a little longer and distinctly narrower than the second posterior cell, its base situated almost opposite but slightly beyond the base of the latter; anterior branch of the fifth longitudinal vein as in the last species.

Hab.—Blue Mountains (Masters); Berowra, N.S.W. (Skuse).
January.

Obs.—I have seen only two specimens of this well-marked species.

201. *CULEX NOTOSCRIPUS*, sp.n. (W. Macleay, MSS.).

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.070 inch | .. | 1.77 millimètres. |
| Expanse of wings..... | 0.140 × 0.030 | ... | 3.55 × 0.76 |
| Size of body..... | 0.160 × 0.030 | ... | 4.06 × 0.76 |
| ♀.—Length of antennæ..... | 0.085 inch | ... | 2.14 millimètres. |
| Expanse of wings..... | 0.160 × 0.040 | ... | 4.06 × 1.01 |
| Size of body..... | 0.180 × 0.035 | ... | 5.56 × 0.88 |

♂.—Antennæ light brown, verticils greyish-sericeous, about $\frac{7}{8}$ the length of the palpi; first joint of the scapus with a small patch of silvery-white scales on the inner side. Eyes olive-green, bordered behind with a fine line of silvery-white scales, followed by a broad band of black or very deep violet-black, behind which

is a patch of yellow scales. Proboscis as long as the palpi, violet-black, or very deep violet-brown, with a moderately broad ring of white just beyond the middle. Palpi brown, violet-black towards the apex, the last two joints ringed with white at the base. Thorax deep umber-brown, with a dense minute black pubescence, and marked with several fine longitudinal lines:—a median one of silvery-white, becoming furcate before reaching the scutellum (the fork enclosing a space entirely destitute of pubescence); a short golden-yellow (sometimes silvery) line on each side of this, starting below the anterior border and terminating before the middle of the thorax; a lateral long sinuous silvery-white one, the anterior extremity very close to the median line, the posterior half little bent; lastly there is another short line of silvery-white above the wings, the anterior extremity of which does not reach the middle of the thorax; pleuræ, scutellum, and metanotum paler brown than the rest of the thorax, the first spotted with (generally eleven) small patches of silvery-white scales; scutellum bordered with a broad line of silvery-white scales, interrupted a short distance from each extremity; the interstices of the thoracic lines and the scutellum beset with long black hairs. Halteres pale, with some white scales. Abdomen twice the length of the thorax, deep violet-black or violet-brown, each segment bordered anteriorly with ochre-yellow scales and; spotted laterally with a small patch of silvery-white scales; long golden-yellow hairs; beneath violet-black or violet-brown, each segment with a slight band of silvery-white scales anteriorly, the short terminal segment covered with silvery-white scales; holding forceps deep brown. Coxæ yellowish, with silvery-white scales and golden-yellow hairs. Femora, tibiæ, and tarsi violet-black, a silvery-white line along each side of the femora and tibiæ, and a ring of silvery-white at the base of all the joints of the tarsi of the hind-legs, and on the first and second joints of the tarsi in the fore- and intermediate legs. Wings about the length of the abdomen, pellucid, with a scarcely perceptible brownish tint, the veins densely



covered with narrow brown scales, cilia sericeous-grey, brilliant violet and purple reflections at a certain obliquity. Auxiliary vein joining the costa a short distance before the tip of the posterior branch of the fifth longitudinal vein; middle cross-vein equal in length to the posterior cross-vein, situated at a point in front of it a distance equal to twice its length, the latter opposite the middle of the posterior branch of the fifth longitudinal; first sub-marginal cell narrower and longer than the second posterior cell, its base lying opposite the base of the latter; anterior branch of the fifth longitudinal as in the last species.

Hab.—Sydney, and generally distributed in N.S.W. (Masters and Skuse). September to January.

Obs.—This is a very elegant and plentiful insect, occasionally coming into the house in the day time, and causing more painful wounds than any other mosquito known by me to occur in Sydney. A small variety is plentiful on the Blue Mountains. From December to March water butts and garden tanks swarm with the larvæ in all stages of their existence. In the hot summer weather the larvæ are hatched from the boat-like mass of (nearly three hundred) eggs in about twenty-four hours, and the perfect insects emerge in from three weeks to a month.

202. CULEX BANCROFTI, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·065 inch | ... | 1·66 millimètres. |
| Expanse of wings | 0·100 × 0·023 | ... | 2·54 × 0·58 |
| Size of body..... | 0·140 × 0·030 | ... | 3·55 × 0·76 |

Antennæ very dark brown, the verticils black, about $\frac{3}{4}$ the length of the palpi; first joint of the scapus black, with silvery-white scales. Head deep brown, almost black (when denuded), covered with violet-black scales, with a very small patch of silvery-white on each side, some white or yellow scales in the middle, and a line of silvery-white bordering the eyes. Proboscis deep violet-black, as long as the palpi. Palpi deep violet-black, the four joints ringed at the base with silvery-white, the first two rings much broader than

the last two. Thorax very dark brown (when denuded), covered with brown scales, interspersed with some brown hairs, and traversed by four longitudinal silvery-white lines:—the two median ones extremely fine and rather indistinct, parallel, stopping at an oblong bare space in front of the scutellum, the lateral ones bent at the middle, distinct, particularly the anterior half which is much broader than the rest; pleuræ very dark brown, spotted with numerous small patches of brilliant silvery-white scales; covered above with silvery-white scales; scutellum very dark brown, covered above with silvery-white scales and fringed with long brown hairs; dark brown. Halteres ochre-yellow. Abdomen a little more than twice the length of the thorax, densely clothed with violet-black scales, the second to sixth segments bordered anteriorly with a narrow band of white, those on the last three short and not reaching the lateral borders, each segment with a small patch of brilliant silvery-white scales at the sides; venter covered with yellowish and violet-black scales, the latter predominating; holding-forceps black or very deep brown, densely haired. Coxæ brown with silvery-white scales. Femora, tibiæ and tarsi covered with violet-black scales; the femora with white scales along the sides nearly to the tip and beneath on the basal half, the extreme apex silvery-white; the first two joints of the fore and intermediate, and all the joints of the hind tarsi, ringed with silvery-white at the base, those of the first two pairs of tarsi very slight. In the hind-legs, the tibia about $\frac{1}{3}$ longer than the metatarsus. Wings about the length of the abdomen, hyaline, the veins covered with violet-brown scales. Auxiliary vein reaching the costa opposite the cross-vein, and much before the tip of the posterior branch of the fork of the fifth longitudinal; middle cross-vein shorter than the posterior cross-vein, situated beyond it a distance a little greater than the length of the latter; first sub-marginal cell considerably longer and almost imperceptibly narrower than the second posterior cell, its base lying almost opposite that of the latter; anterior branch of the fifth longitudinal vein as in the last species.



Hab.—Brisbane, Queensland (Drs. J. and T. L. Bancroft).
Several specimens. December.

203. *CULEX PROCAX*, sp.n.

♀.—Length of antennæ..... 0·080 inch ... 2·02 millimètres.
Expanse of wings..... 0·130 × 0·035 ... 3·30 × 0·88
Size of body..... 0·150 × 0·030 ... 3·81 × 0·76

Antennæ brown, nearly the length of the proboscis; first joint of the scapus bright ochraceous, second ochraceous at the base. Head light umber-brown, adorned with golden-yellow scales. Proboscis brownish-ochraceous, dusky at the tip, about nine times the length of the palpi. Palpi light umber-brown. Thorax reddish-brown, covered with golden-yellow scales; pleuræ reddish-brown, spotted with small patches of white scales; scutellum and metanotum reddish-brown, the former with golden-yellow scales and long hairs. Halteres ochraceous. Abdomen hardly twice the length of the thorax, black, each segment bordered anteriorly with a narrow band of white, and fringed posteriorly with golden-yellow hairs; venter covered with white scales; lamellæ of the ovipositor brown. Legs brown, the underside of the femora white, and the joints of the tarsi ringed with white at the base. In the hind-legs the tibia about $\frac{1}{4}$ longer than the metatarsus. Wings longer than the abdomen, pellucid, with a scarcely perceptible brownish tint, veins thickly covered with slender brown scales, cilia grey; brilliant reflections. Auxiliary vein joining the costa opposite or a little before the tip of the posterior branch of the fifth longitudinal; middle cross-vein somewhat longer than the posterior cross-vein, situated in front of the latter a distance about equal to its length; first submarginal cell a little longer and much narrower than the second posterior cell, its base situated exactly opposite that of the latter; anterior branch of the fifth longitudinal vein as in the last species.

Hab.—Gosford and South Clifton, N.S.W. (Skuse). December to February (?).

Obs.—A day-flying species.

B. TARSAL JOINTS WITHOUT PALE RINGS.

204. CULEX COMMOVENS, Walker.

Culex commovens, Walk., *Insecta Saundersiana*, Vol. I. Diptera, 1856, p. 432.

“♀.—*Fusca, robusta; proboscis testacea, supra apiceque nigricans; palpi testacei; antennæ testaceæ fasciis nigricantibus; thorax vittatus?; abdomen fulvo fasciatum; pedes fulvi, validi, femoribus tibiis et tarsorum articulis apice fusciscentibus; alæ limpidæ, venis testaceis fusco notatis.*”

“Described from injured specimens. Brown, stout. Proboscis long, stout, straight, testaceous, blackish towards the base above and at the tip. Palpi testaceous, rather more than half the length of the proboscis. Antennæ testaceous, with very slender blackish bands, shorter than the *antennæ* (!) Thorax striped? Abdomen with tawny bands. Legs tawny, stout; tips of the femora, of the tibiæ and of the joints of the tarsi brownish. Wings limpid; veins testaceous, with some brownish marks. Length of the body 4 lines; of the wings 7 lines.”

“New Holland.”

205. CULEX AUSTRALIS, Erichson.

Culex australis, Erichs., *Archiv für Naturg.* Vol. VIII. 1842, p. 270.

“*Testaceus, thorace dorso fusco, abdomine nigro-fasciato, femoribus tibiisque summo apice pallidis.*”

Antennæ luteous. Proboscis somewhat elongate, palpi a little shorter than it in the ♂. Head fuscous-testaceous. Thorax fuscous on the back, testaceous at the pleuræ and below. Abdomen covered with a grey pilosity, segments pale at the base, black at the apex. Legs fuscous-testaceous, with the femora and tibiæ white at the extreme apex. Wings hyaline, veins testaceous, with the anterior ones fuscous-villose. Length of the body $3\frac{1}{2}$ lines; of the proboscis 2 lines.

“*Hab.*—Tasmania.”

206. CULEX NIGRITHORAX, Macquart.

Culex nigrithorax, Macq., Diptères Exotiques, 2nd Suppl. 1847, p. 9.

"♂.—*Thorace nigro. Abdomine fusco incisuris albidis. Pedibus rufescentibus.*"

Proboscis black. Palpi and antennæ brownish. Thorax and pleuræ rather dull black. Abdomen with the anterior border of the segments yellowish-white; last segment and copulatory armature black; venter with whitish hairs. Legs rather bright tawny; extremity of the femora brownish; posterior tarsi brownish. Wings a little yellowish, with reddish veins; cells normal. Long. $3\frac{1}{2}$ lines.

Tasmania.

207. CULEX CRUCIANS, Walker.

Culex crucians, Walk., Insecta Saundersiana, Vol. I. Diptera, 1856, p. 432.

"♀.—*Fusca; proboscis fulva, apice fusca; antennæ nigrae, basi fulvae; pectus fulvum; abdomen fasciis albido-testaceis; coxæ et femora testacea; alæ subcinereæ, venis fuscis subciliatis basi testaceis; halteres testacei.*"

"Brown. Proboscis slender, straight, tawny, brown at the tip. Antennæ black, shorter than the proboscis, tawny at the base. Pectus tawny. Abdomen darker than the thorax, with a whitish testaceous band in front of each segment. Legs brown; coxæ and femora testaceous. Wings greyish; veins brown, slightly ciliated, testaceous at the base. Halteres testaceous. Length of the body $3\frac{1}{2}$ lines; of the wings 6 lines.

"Van Diemen's Land."

208. CULEX SAGAX, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.095 inch | ... | 2.39 millimètres. |
| Expanse of wings..... | 0.170 × 0.050 | ... | 4.31 × 1.27 |
| Size of body | 0.200 × 0.040 | .. | 5.08 × 1.01 |

Antennæ fuliginous, nearly the length of the proboscis; joints of the scapus more or less testaceous or ochraceous, with a few

white scales. Head deep brown densely covered with brown and golden-yellow scales and hairs. Proboscis black, rather more than five times the length of the palpi. Palpi black. Thorax deep brown or pitchy black (when denuded), densely covered with golden-yellow and whitish scales, which give it an almost sericeous appearance, traversed by three longitudinal rows of brown hairs, the lateral ones extending from the collare to the scutellum, the intermediate row terminating at an oblong bare space in front of the scutellum; pleuræ deep umber-brown, spotted with small patches of white scales; scutellum testaceous covered with whitish scales and long brown hairs; metanotum testaceous or testaceous-brown. Halteres ochre-yellow. Abdomen nearly twice the length of the thorax, each segment covered with violet-black scales bordered anteriorly with an undulate ochreous band; venter densely covered with pale ochreous scales; lamellæ of the ovipositor deep brown, elongate. Coxæ testaceous-brown, with white scales. Femora and tibiæ covered with violet-black scales more or less dusted with pale ochreous, the former pale ochreous beneath and slightly yellow at the extreme apex. Tarsi covered with violet-brown scales, having a peculiar ochreous reflection at a certain obliquity. In the hind-legs the tibia $\frac{1}{2}$ longer than the metatarsus. Wings nearly the length of the whole body, hyaline, the veins densely covered with violet-brown scales. Auxiliary vein joining the margin exactly opposite the tip of the posterior branch of the fifth longitudinal; middle cross-vein rather longer than the posterior cross-vein, situated in front at a distance equal to rather less than the length of the latter; first sub-marginal cell much narrower and scarcely longer than the second posterior cell, its base lying a little beyond that of the latter; anterior branch of the fifth longitudinal vein originating at a point nearer opposite the tip of the sixth longitudinal than to the origin of the second longitudinal, reaching the posterior border at a point opposite the middle of the second posterior cell.

Hab.—Murrumbidgee, N.S.W. (Prof. W. J. Stephens).

Obs.—A day-flying mosquito.

209. *CULEX MACLEAYI*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.-Length of antennæ..... | 0·095 inch | ... | 2·39 millimètres. |
| Expanse of wings..... | 0·170 × 0·050 | ... | 4·31 × 1·27 |
| Size of body..... | 0·190 × 0·040 | ... | 4·81 × 1·01 |

Antennæ fuliginous, about the length of the proboscis; first joint of the scapus and base of the second testaceous. Head deep brown, densely covered with golden-yellow scales, interspersed with a few brown hairs. Proboscis violet-brown, lighter in the middle, six times the length of the palpi. Palpi violet-brown. Thorax deep brown (when denuded), densely covered with golden-yellow scales and scattered brown hairs, traversed by two indistinctly traceable parallel longitudinal bare lines; pleuræ lighter brown than the thorax, spotted with a few small patches of white scales and golden-yellow hairs; scutellum and metanotum more or less testaceous-brown, the former covered with golden-yellow scales and long brown hairs. Halteres ochre-yellow. Abdomen twice the length of the thorax, deep umbrous-brown with an almost imperceptible violet reflection, each segment bordered anteriorly with a very narrow band of whitish or pale yellowish scales, densely fringed posteriorly and laterally with long pale golden-yellow hairs; venter densely covered with whitish or pale yellowish scales; lamellæ of the ovipositor light brown, densely pubescent. Coxæ ochraceous or testaceous, with white scales and golden-yellow hairs. Femora, tibiæ and tarsi covered with violet-brown scales, the undersides of the former two being covered with whitish or pale yellowish; in the hind-legs the tibiæ slightly tipped with whitish or pale yellowish. In the hind-legs the tibia and metatarsus of about equal length. Wings longer than the abdomen, hyaline, the veins densely covered with very long fine brown scales. Auxiliary vein joining the costa opposite the tip of the posterior branch of the fork of the fifth longitudinal; middle cross-vein shorter than the posterior cross-vein, situated in front of it a distance a little greater than the length of the latter; first sub-marginal cell scarcely narrower, but considerably longer, than

the second posterior cell, its base lying a short distance before that of the latter, and opposite the tip of the auxiliary vein; anterior branch of the fifth longitudinal vein originating opposite a point mid-way between the origin of the second longitudinal vein and the tip of the sixth longitudinal, reaching the posterior border opposite the middle of the second posterior cell.

Hab.—King George's Sound, Western Australia (Masters).
Two specimens.

210. *CULEX LINEALIS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.095 inch | ... | 2.39 millimètres. |
| Expanse of wings..... | 0.160 × 0.045 | ... | 4.06 × 1.13 |
| Size of body..... | 0.200 × 0.040 | ... | 5.08 × 1.01 |

Antennæ brown, about $\frac{5}{6}$ the length of the proboscis; first joint of the scapus dull reddish-brown, with yellow scales. Head brown, densely covered with golden-yellow scales and hairs. Proboscis uniformly covered with violet-black scales, about six times the length of the palpi. Palpi uniformly covered with violet-black scales. Thorax brown, with four distinct lines of golden-yellow scales, and densely bordered laterally with golden-yellow scales; interstices of the lines bare or nearly so; two median lines running parallel, and rather close together, from the anterior border for two-thirds the length of the thorax, at this point apparently coalescent, but proceeding to the scutellum is a slightly wider fork, the branches being parallel; the other two lines starting below the anterior border, running parallel, and continuing to the scutellum, and lying somewhat nearer to the median lines than to the lateral border of scales; pleuræ brown, with a few somewhat indistinct patches of white scales and a small tuft of moderately long white hairs under the origin of the wings; scutellum brown, with two lines of golden-yellow scales, coalescent at the apex, and appearing as a continuation of the two median lines of the thorax; beset with long golden-yellow hairs; metanotum brown. Halteres ochre-yellow. Abdomen not quite

twice the length of the thorax, superior segments covered with violet-black scales, each segment bordered anteriorly with a very narrow band of ochre-yellow; venter ochre-yellow, each segment bordered posteriorly with a moderately narrow band of violet-brown or violet-black. Coxæ and femora ochre-yellow, the latter more or less covered along the upper side and at the tip with violet-black scales, the extreme apex of the femora ochre-yellow; tibiæ and tarsi violet-black or violet-brown, the former with a more or less distinct line of ochre-yellow on the sides and slightly ochre-yellow at the extreme apex, and the first two joints of the tarsi very slightly and indistinctly ochre-yellow at the base. In the hind-legs the tibiæ about $\frac{1}{3}$ longer than the metatarsi. Wings longer than the abdomen, hyaline, the veins densely covered with violet-brown scales. Auxiliary vein joining the costa opposite the middle cross-vein and a little before the tip of the posterior branch of the fork of the fifth longitudinal; middle cross-vein rather indistinct, longer than the posterior cross-vein situated beyond it a distance twice the length of the latter; first sub-marginal cell scarcely longer than the second posterior cell, considerably narrower, its base lying a short distance beyond that of the latter; anterior branch of the fifth longitudinal vein as in the last species.

Hab.—Knapsack Gully, Blue Mountains; Hexham, and Wheeny Creek, N.S.W. (Skuse). October and January.

211. CULEX (? sp.)

| | | | |
|----------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·085 inch | ... | 2·14 millimètres. |
| Expanse of wings..... | 0·160 × 0·040 | ... | 4·06 × 1·01 |
| Size of body..... | 0·220 × 0·040 | ... | 5·58 × 1·01 |
| ♀.—Length of antennæ... .. | 0·100 inch | ... | 2·54 millimètres. |
| Expanse of wings..... | 0·180 × 0·045 | ... | 4·56 × 1·13 |
| Size of body..... | 0·220 × 0·047 | ... | 5·58 × 1·18 |

♂ and ♀.—Antennæ light brown; first joint of the scapus and basal half of the second joint ochre-yellow or ochraceous, in the ♂

more than $\frac{2}{3}$ the length of the palpi, the basal half of each of the first eleven flagellar joints whitish or yellowish; in the ♀ somewhat longer than the proboscis. Head brown or ochreous-brown (when denuded), densely covered with golden-yellow scales and hairs. Proboscis covered with brown or brownish-ochreous scales, violet-brown or violet-black at the base and towards the extremity; in the ♀ about seven times the length of the palpi. Palpi in the ♂ light ochreous-brown, the scales with a faint violaceous tinge, the fourth joint with a pale indistinct naked yellow ring at the base; in the ♀ uniformly covered with violet-black scales. Thorax generally ochreous- or testaceous-brown, sometimes darker (when denuded), densely covered with golden-yellow scales, indistinctly traversed by four very fine naked lines,* two median parallel ones terminating at an oblong bare space immediately in front of the scutellum, and two lateral curved lines, running straight from the scutellum to nearly the middle of the thorax then turning off to the lateral margin, these latter being frequently imperceptible; lateral margin and posterior portion of the thorax densely beset with long golden-yellow hairs; pleuræ more or less ochreous- or testaceous-brown, frequently very pale, sometimes reddish-brown, with a few small, and often indistinct, patches of white scales; scutellum ochre-yellow, or ochreous-brown, covered with golden-yellow scales and fringed with long golden-yellow hairs; metanotum ochreous or light brown. Halteres pallid or ochre-yellow, the club infuscated. Abdomen more than twice the length of the thorax in the ♂, shorter in the ♀; covered superiorly with violet-black or violet-brown scales, each segment bordered anteriorly with a narrow band of pale ochre-yellow; all the segments densely fringed posteriorly and beneath with golden-yellow hairs; venter covered with whitish or yellowish scales; ♂ forceps and ♀ ovipositor ochreous-yellow, densely haired. Legs covered with violet-brown scales, the femora with white scales

*These lines are often very difficult to make out except in fresh specimens, but their course can always be plainly seen on a perfectly denuded thorax when viewed in a certain light, being then represented by pale lines.

beneath and slightly at the base, the latter and the tibiae very slightly tipped with ochreous at the apex (almost imperceptibly in most specimens); tibiae and tarsi with a pale ochreous reflection beneath. Coxæ yellow or brownish-yellow, with white scales. Wings longer than the abdomen, hyaline, the veins densely covered with violet-brown scales. Auxiliary vein joining the costa immediately opposite the tip of the posterior branch of the fork of the fifth longitudinal vein; middle cross-vein about equal in length to the posterior cross-vein, situated in front of the latter a distance equal to twice its length; first sub-marginal cell longer and somewhat narrower than the second posterior cell, its base situated opposite that of the latter in the ♂, slightly before it in the ♀; anterior branch of the fifth longitudinal vein originating opposite a point rather nearer the origin of the second longitudinal than to the tip of the sixth longitudinal.

Hab.—Widespread in Australia. Found in towns throughout the year, but more numerous and causing most annoyance during the summer months.

Obs.—Possibly a variety of *C. ciliaris*, Linn.

213. *CULEX ATRIPES*, sp.n. (W. Macleay, MSS.)

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·070 inch | ... | 1·77 millimètres. |
| Expanse of wings..... | 0·120 × 0·030 | ... | 3·04 × 0·76 |
| Size of body | 0·150 × 0·030 | ... | 3·81 × 0·76 |

Antennæ black, a little shorter than the proboscis; first joint of the scapus with a hoary reflection. Head densely covered with violet-black scales, the eyes bordered with a very fine line of silvery-white scales. Proboscis six times the length of the palpi, both uniformly covered with violet-black scales. Thorax (nitidous black when denuded), covered with light bronzy scales, and densely haired above the origin of the wings and posteriorly; prothoracic lobes and pleuræ, also an oblong spot just before the origin of the wings, covered with silvery-white scales; scutellum ochreous, covered above with violet-brown scales and fringed with long

hairs; metanotum reddish-brown. Halteres ochreous, the club and apical portion of the stem more or less brown. Abdomen about twice the length of the thorax, uniformly clothed superiorly with violet-black scales, each segment with a white patch at the sides; venter densely covered with silvery-white scales. Legs covered with violet-black scales, the coxæ more or less covered with silvery-white scales and the femora dusted on their basal half with pale scales which have a light bronzy reflection in a certain light. In the hind-legs the metatarsus nearly $\frac{1}{7}$ longer than the tibia. Wings longer than the abdomen, pellucid, almost hyaline, with an almost imperceptible brownish tint, the veins thickly covered with violet-black scales; violaceous and purpureous reflections. Auxiliary vein joining the costa opposite a point about mid-way between the middle and posterior cross-vein, and considerably before the tip of the posterior branch of the fifth longitudinal vein; middle cross-vein considerably shorter than the posterior cross-vein, and situated beyond it a distance equal to about twice the length of the latter; first sub-marginal cell much longer and scarcely narrower than the second posterior cell, its base lying somewhat before that of the latter; anterior branch of the fifth longitudinal vein originating opposite a point about mid-way between the origin of the second longitudinal and the tip of the sixth longitudinal.

Hab.—Homebush (Masters); Sutherland, and Knapsack Gully, N.S.W. (Skuse).

Obs.—A ♂ specimen taken by me at Mossman's Bay, near Sydney, appears to belong to this species; the femora and tibiæ are tipped with white scales, and the tarsi exhibit light reflections when viewed at a certain obliquity.

Genus 3. ANOPHELES, Meig.

Anopheles, Meigen, Syst. Besch. I. 1818, p. 10; Brit. Ent. Vol. V. 1828, p. 210; Macquart, S. & B. Vol. I. 1834, p. 32; Zetterstedt, D. Sc. 1850; Walker, I. B. Vol. III. 1856, p. 248; Schiner, F. A. 1864.

Head small, sub-globose, situated moderately deep in the thorax. Eyes reniform, emarginate at the insertion of the antennæ, slightly separated on the front. Ocelli wanting. Palpi porrected, clothed with scales, almost the length of the proboscis in both sexes, five-jointed, first joint minute, second long and slender, third about twice the length of the second, fourth and fifth joints taken together about equal in length to the second, forming an elongated club in the ♂. Proboscis long, slender, densely clothed with scales, straight or bent downwards. Antennæ porrected, a little shorter than the palpi in both sexes, 2- + 12-jointed; first joint of the scapus large and globose, second in the ♂ rather longer and stouter than the first flagellar joint, in the ♀ about twice the length and somewhat stouter than the first flagellar joint, cylindrical; in the ♂ the ten following flagellar joints short, fusiform, whorled at the middle with very long hairs, the penultimate joint greatly elongated beyond the whorl, terminal joint shorter, slender, like the continuation of the last, with a few moderately long hairs forming a verticil at the base, both clothed with a short pubescence; in the ♀ all the flagellar joints cylindrical, of equal thickness, the first shorter than the rest, clothed with a dense minute pubescence and sparsely verticillate-pilose at the base. Clypeus produced, covering the base of the palpi. Thorax oblong, little arched; scutellum small; metathorax steep. Abdomen slender, linear, with eight segments in both sexes; in the ♂ terminating with holding-forceps; the ovipositor of the ♀ with short terminal lamellæ. Legs very long and slender, the fore-pair the shortest; very minutely spinulose; metatarsal joint very long, in the hind-legs longer than the tibiæ; unguis small, acute. Wings as long or longer than the abdomen, sub-elliptic, densely ciliated, the veins very densely covered with slender, lanceolate scales; incumbent in repose. Humeral cross-vein and sub-costal cross-vein present, the latter situated at or beyond the middle of the auxiliary vein. Marginal cross-vein present, the second longitudinal vein appearing before it in the first basal cell as a short piece of scaled vein not continued to the base of the

wing as an incassation of a wing-fold. Second longitudinal vein terminating in a very long narrow fork, the branches running parallel. Third longitudinal vein not starting from the second longitudinal vein, joined to it by a supernumerary cross-vein, appearing to originate in the first basal cell almost opposite the tip of the sixth longitudinal vein, scaled between this point and the supernumerary cross-vein, and continued back to the base of the wing as an incassation of a wing-fold; middle cross-vein situated in advance of the supernumerary cross-vein; fourth longitudinal vein terminating in a broader and shorter fork than that of the second longitudinal vein, their bases more or less opposite. Posterior cross-vein situated before or in a line with the middle cross-vein. Fork of the fifth longitudinal vein broad, longer than that of the second longitudinal vein, its base situated opposite the origin of the latter vein. Sixth longitudinal vein only slightly arcuated, joining the wing-margin opposite or beyond the posterior cross-vein (Pl. XL, fig. 3).

214. ANOPHELES ANNULIPES, Walker.

Anopheles annulipes, Walk., Insecta Saundersiana, Vol. I. Diptera, 1856, p. 433.

“♀.—*Fusco gracillima, cano tomentosa; proboscis ex parte testacea; palpi albidī, fusco fasciati; thorax subvittatus; pedes longissimi, gracillimi, femoribus tibiisque albedo fasciatis, femoribus basi testaceis, tarsis fascia alba, posticis longissimis; alæ subcinereæ, venis fuscis dense ciliatis albedo fasciatis, costa nigricante maculis tribus albidis; halteres albidī.*”

“Brown, very slender, with hoary tomentum. Proboscis partly testaceous, rather longer than palpi. Palpi whitish, with brown bands, longer than the antennæ. Thorax indistinctly striped. Legs very long and slender; femora and tibiæ with numerous whitish bands; femora testaceous towards the base; tarsi with a white band; hind tarsi extremely long. Wings slightly greyish; veins brown, with whitish bands, thickly ciliated; costa blackish,

with three oblong whitish spots. Halteres whitish. Length of body 3-3½ lines; of the wings 6-7 lines."

"Van Diemen's Land."

215. *ANOPHELES MUSIVUS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.080 inch | ... | 2.02 millimètres. |
| Expansive of wings..... | 0.200 × 0.050 | ... | 5.08 × 1.27 |
| Size of body..... | 0.230 × 0.040 | ... | 5.84 × 1.01 |

Antennæ brown, the joints with a white pubescence and verticils, and the second joint of the scapus and following three or four flagellar joints with white scales; about $\frac{1}{2}$ the length of the palpi; first joint of the scapus brownish-ochreous. Head brown, with white scales on the vertex, from which some long white hairs stretch out over the front. Proboscis brown, equal in length to the palpi. Palpi covered with violet-black scales, second joint with a slight ring of white scales at the apex, last three joints with a broad ring of white at the apex, and the second and third joints with a longitudinal patch of white above, in the second about the middle, in the third on the first third of its length. Thorax fuscous-brown, with a slaty-grey reflection, imperfectly covered with white scales, beset laterally and posteriorly with yellow hairs; pleuræ fuscous-brown; scutellum fuscous, ochreous at the sides, densely fringed with long yellow hairs; metanotum fuscous. Halteres deep fuscous, the stem yellow. Abdomen rather more than twice the length of the thorax, fuscous-brown, levigate, rather densely covered with yellow hairs, the last segment with some yellow scales; lamellæ of the ovipositor deep fuscous-brown. Legs covered with violet-black scales, the femora and tibiæ and sometimes the metatarsus spotted with small patches of whitish or pale yellow scales, the tibiæ and first four joints of the tarsi also very slightly tipped with whitish or pale yellow. Coxæ ochreous-grey, sprinkled with white scales and yellow hairs. In the hind-legs the metatarsus a little longer than the tibia. Wings the length of the thorax and abdomen taken together, hyaline, slightly tinged with brown at

the stigmatic region, the veins very densely covered alternately with patches of violet-brown and whitish or pale yellow scales, four long patches of very deep violet-brown, almost black, scales occurring along the costal vein. Sub-costal cross-vein situated at the middle of the auxiliary vein. Auxiliary vein reaching the costa considerably before the tip of the posterior branch of the fork of the fifth longitudinal vein; second longitudinal vein beginning a very short distance before the marginal cross-vein (almost imperceptibly in one specimen); third longitudinal vein appearing to commence in the fifth basal cell a short distance before the supernumerary cross-vein, and almost opposite the tip of the sixth longitudinal vein; middle cross-vein in advance of the supernumerary cross-vein a distance equal to half its length; posterior cross-vein opposite the tip of the sixth longitudinal vein and situated before the middle cross-vein a distance equal to its length; all three cross-veins of about equal length; first sub-marginal cell considerably longer and somewhat narrower than the second posterior cell, its base situated a little before that of the latter; base of the anal cell lying almost opposite but somewhat before the origin of the second longitudinal vein.

Hab.—Elizabeth Bay, near Sydney (Masters and Skuse); Mt. Kembla, Illawarra, N.S.W. (Mr. A. G. Hamilton). Feb.

216. ANOPHELES ATRATIPES, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.070 inch | ... | 1.77 millimètres. |
| Expanse of wings..... | 0.165 × 0.033 | .. | 4.18 × 0.84 |
| Size of body..... | 0.165 × 0.030 | ... | 4.18 × 0.76 |

Antennæ about $\frac{3}{4}$ the length of the palpi, dark brown almost fuliginous, with hoary pubescence and verticils, the first joint of the scapus black. Head fuliginous, adorned with white scales intermixed with some black hairs, and a tuft of long white parallel hairs stretching out from the vertex over the bases of the antennæ. Proboscis and palpi densely and uniformly clothed with deep violet-black scales, the terminal joint of

the latter very slightly tipped with white. Thorax pruinose-brown, with a small roundish dark spot laterally about the middle of its length and another immediately in front of the scutellum; traversed by three longitudinal parallel double rows of moderately long black hairs intermixed with short slender shining white scales; lateral margins slightly testaceous with a few scattered white scales and some short white hairs above and in front of the origin of the wings; pleuræ dark brown somewhat marbled with testaceous; scutellum testaceous, with a dark roundish spot on the apex, fringed with long black hairs; metanotum brown. Halteres black or very deep brown, the stem ochre-yellow. Abdomen about twice the length of the thorax, black, levigate, sparingly clothed with golden-yellow hairs (the terminal joint more densely); lamellæ of the ovipositor black, fringed with short golden-yellow hairs. Coxæ ochreous. Legs clothed with violet-black scales, the femora and tibiæ bright ochreous beneath and very slightly at the tips. Coxæ pale ochreous, without scales, slightly haired. Wings the length of the entire body, bright ochre-yellow at the base, hyaline, the veins very densely covered with scales, those on the costa, auxiliary and first longitudinal veins black, the remaining veins with black and yellowish scales arranged in alternate series, almost entirely black on the sixth longitudinal vein; six patches of black scales are prominent, situated at the following points:—on the fifth longitudinal vein mid-way between its origin and the base of its fork, at the base of the fork, at the bases of the second and third longitudinal veins, and at the bases of the forks of the second and fourth longitudinal veins; the cilia on the costa between a point immediately above the tip of the first longitudinal vein and immediately below the tip of the third longitudinal vein pale yellowish or whitish, the remaining cilia violet-black with a light sericeous reflection. Auxiliary vein reaching the costa opposite the middle cross-vein; second longitudinal vein beginning some distance before the marginal cross-vein; supernumerary and middle cross-vein opposite one another, situated beyond the posterior cross-vein a distance

not equal to the length of the latter; posterior cross-vein situated opposite the beginning of the third longitudinal vein, and considerably beyond the tip of the sixth longitudinal vein; first submarginal cell longer but not narrower than the second posterior cell, its base situated a little before that of the latter; base of the anal cell lying a little before the origin of the second longitudinal vein.

Hab.—Berowra, N.S.W. (Skuse). January.

217. ANOPHELES MASTERSI, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0.075 inch | ... | 1.89 millimètres. |
| Expanse of wings..... | 0.140 × 0.030 | ... | 3.55 × 0.76 |
| Size of body..... | 0.170 × 0.025 | ... | 4.31 × 0.62 |
| ♀.—Length of antennæ..... | 0.060 inch | ... | 1.54 millimètres. |
| Expanse of wings..... | 0.150 × 0.030 | ... | 3.81 × 0.76 |
| Size of body..... | 0.130 × 0.025 | ... | 3.30 × 0.62 |

Very like *A. musivus* produced on a smaller scale. Antennæ in the ♂ about $\frac{3}{4}$ the length of the palpi, very pale ochreous, the verticils sericeous; first joint of the scapus light testaceous-brown; in the ♀ about $\frac{4}{5}$ the length of the palpi, dark brown, with the pubescence and verticils of the joints white, and the first two or three flagellar joints covered with white scales. Head brown, with white scales on the vertex, from which long white hairs project out over the front. Proboscis about the length of the palpi; in the ♂ entirely brown, in the ♀ with the basal half dark brown and the apical half pale ochreous. Palpi brown, the second joint very slightly tipped with white, and the last three joints with a very broad ring of white on the apical portion, nearly covering the whole joint in the last two; in the ♂ the second and third joints also with a short longitudinal streak of white on the upper side. Thorax in the ♂ fuscous-brown, in the ♀ somewhat ochreous-brown; imperfectly covered with white or yellow scales and yellow hairs; pleuræ and metanotum fuscous-brown; scutellum fuscous, sordid-ochreous at the sides, thickly fringed with long

yellow hairs. Halteres deep fuscous, the stem yellow. Abdomen in the ♂ more than twice the length of the thorax, shorter in the ♀; fuscous-brown, levigate, densely clothed with golden-yellow hairs, (longer in the ♂); the last segment, and holding-forceps of the ♂, ornamented with white scales. Legs covered with violet-brown scales, the femora, tibiae and metatarsus numerously spotted with very small patches of white or pale yellow, the tibiae and first four joints of the tarsi also slightly tipped with the same. In the hind-legs the metatarsus a little longer than the tibia. Wings about the length of the abdomen in the ♂, longer than the whole body in the ♀, hyaline, slightly tinged with very pale brownish-yellow at the stigmatic region, the veins very densely covered with alternate series of violet-brown and whitish or pale yellow scales, four long patches of very deep violet-brown, almost black, scales occurring along the costal vein. Sub-costal cross-vein situated considerably beyond the auxiliary vein. Auxiliary vein reaching the costa considerably before the tip of the posterior branch of the fork of the fifth longitudinal vein; third longitudinal vein appearing to commence a short distance before the supernumerary cross-vein, opposite the posterior cross-vein and somewhat before the tip of the sixth longitudinal vein; supernumerary, middle and posterior cross-veins about equal in length, most indistinct in some specimens; middle cross-vein situated in advance of the supernumerary cross-vein a distance equal to half its length; posterior cross-vein situated before the middle cross-vein a distance equal to its length; first sub-marginal cell considerably longer and somewhat narrower than the second posterior cell, its base situated somewhat before that of the latter; base of the anal cell situated opposite the origin of the second longitudinal vein.

Hab.—Blue Mountains, N.S.W. (Masters). Three specimens.

218. *ANOPHELES STIGMATICUS*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♂.—Length of antennæ..... | 0·080 inch | ... | 2·02 millimètres. |
| Expand of wings..... | 0·160 × 0·035 | ... | 4·06 × 0·88 |
| Size of body..... | 0·180 × 0·030 | ... | 4·56 × 0·76 |

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0.070 inch | ... | 1.77 millimètres. |
| Expansé of wings..... | 0.160 × 0.035 | ... | 4.06 × 0.88 |
| Size of body..... | 0.160 × 0.030 | ... | 4.06 × 0.76 |

♂ and ♀.—Antennæ in the ♂ about $\frac{5}{6}$ the length of the palpi, brownish-ochreous; first joint of the scapus black or dark brown; in the ♀ about $\frac{4}{5}$ the length of the palpi, dark brown with a whitish pubescence and brown verticils; first joint of the scapus and basal half of the second testaceous-brown. Head ochraceous-brown, with golden-yellow hairs. Proboscis scarcely longer than the palpi, brown, almost black in the ♀. Palpi brown, almost black in the ♀. Thorax testaceous-brown, darker in the ♀, with three longitudinal double rows of pale golden-yellow hairs; lateral borders rather densely covered with pale golden-yellow hairs; pleuræ testaceous-brown in the ♂, fuscous in the ♀; scutellum ochre-yellow in the ♂, testaceous in the ♀, fringed with long golden-yellow hairs; metanotum testaceous in the ♂, very deep fuscous-brown in the ♀. Halteres deep brown, the stem yellow. Abdomen in the ♂ twice the length of the thorax, shorter in the ♀; fuliginous-brown, levigate, clothed with golden-yellow hairs; ♂ forceps testaceous, densely haired. Legs clothed with violet-brown scales, the hind femora pale yellow for about $\frac{1}{4}$ of their length, the fore and intermediate pairs pale yellow beneath only. Coxæ ochreous- or testaceous-brown. In the hind-legs the metatarsus about $\frac{1}{4}$ longer than the tibia. Wings in the ♂ the length of the thorax and abdomen taken together, and in the ♀ the length of the whole body, hyaline, tinged with pale yellowish-brown at the stigmatic region, the veins thickly covered with light brown scales, darker at the stigmatic region. Sub-costal cross-vein situated about the middle of the auxiliary vein. Auxiliary vein reaching the costa about opposite the middle cross-vein, and considerably before the tip of the posterior branch of the fifth longitudinal vein; second longitudinal vein appearing to originate in the first basal cell opposite the base of the anal cell and some distance before the marginal cross-vein; third longitudinal vein appearing to commence a short distance before the supernumerary cross-vein.

and before the tip of the sixth longitudinal vein; middle cross-vein in the ♂ situated somewhat before or exactly in line with the posterior cross-vein, in the ♀ beyond the latter a distance equal to its length, always situated beyond the supernumerary cross-vein a distance equal to its length; all about the same length; first sub-marginal cell considerably longer and narrower than the second posterior cell, the tips of the fork slightly convergent, its base situated opposite that of the second posterior cell.

Hab.—Blue Mountains, N.S.W. (Masters). Ten specimens.

Genus 4. *ÆDES*, Meig.

Ædes, Meigen, Syst. Besch. Vol. I. 1818, p. 13; Macquart, S. à B. Vol. I. 1834, p. 37; Zetterstedt, D.Sc. 1850; Walker, I.B. iii. 1856; Schiner, F.A. II. 1864.

"Antennæ porrected, filiform, 14-jointed, plumose in the ♂, pilose in the ♀. Proboscis porrected, the length of the thorax. Palpi very short. Wings scaly, incumbent."

Obs.—This is all the information about the genus given by Meigen (Syst. Besch. I.), while Macquart simply says, "Palpi very short ♂, ♀ pointed, thick at the base." From the single ♀ specimen before me I derive the following additional characters, all of which have perhaps been already pointed out by modern Dipterologists, but whose works are not available in Australia.

Head small, sub-globose, scarcely sunk in the thorax. Eyes reniform, a little emarginate at the insertion of the antennæ, not quite contiguous on the front. Ocelli wanting. Palpi very short, densely scaled, 4-jointed;* first two joints minute, the second larger than the first, third joint short, obovate, fourth joint about one third longer than the third, almost elliptical. Proboscis slender, densely scaled. Antennæ porrected, considerably shorter than the proboscis, 2- + 12-jointed; first joint of the scapus large, globose, second pyriform, somewhat wider and about $\frac{1}{3}$ longer

* Should there be a minute terminal joint it is hidden in the scales, but to ascertain whether this be so the specimen might be sacrificed in the attempt.

than the flagellar joints, both densely scaled; flagellar joints short, cylindrical, verticillate-pilose at the base, separated by short pedicels, the terminal joint longer than the rest, coniform. Thorax oblong, arched; prothoracic lobe scarcely noticeable; scutellum small; metathorax steep. Halteres small. Abdomen almost cylindrical, tapering towards the extremity, with eight segments. Legs long, slender, the fore pair the shortest; minutely spinulose; metatarsal joint very long, in the hind-legs longer than the tibiæ; unguis small, acute. Wings longer than the abdomen, narrow, elongate, densely ciliated, the veins very densely covered with more or less elliptical scales which completely cover the wings; incumbent in repose. Humeral cross-vein and sub-costal cross-vein present, the latter situated much before the middle of the auxiliary vein. Marginal cross-vein wanting. Second longitudinal vein starting from the first longitudinal vein a short distance beyond the sub-costal cross-vein, terminating in a long narrow fork the branches of which run parallel. Third longitudinal vein bent sharply downwards at its base then running perfectly straight to the apex of the wing, originating at a point a little nearer to the base of the fork of the second longitudinal than to the origin of the latter. Middle cross-vein situated close to the base of the third longitudinal vein. Fourth longitudinal vein terminating in a fork about equal in width and length to that of the second longitudinal vein, its base lying before that of the latter. Posterior cross-vein situated before the middle cross-vein and about opposite the tip of the sixth longitudinal vein (Pl. XL., fig. 4).

218. *ÆDES VENUSTIPES*, sp.n.

| | | | |
|---------------------------|---------------|-----|-------------------|
| ♀.—Length of antennæ..... | 0·045 inch | ... | 1·13 millimètres. |
| Expanse of wings..... | 0·120 × 0·035 | ... | 3·04 × 0·88 |
| Size of body | 0·150 × 0·030 | ... | 3·81 × 0·76 |

Antennæ deep brown, about $\frac{5}{7}$ the length of the proboscis, covered with a very short hoary pubescence; verticils moderately

long, brown ; both joints of the scapus covered with brown and white scales, those of the second overlapping the basal half of the third joint, so that these two appear to be one long robust joint. Head with a large patch of erect yellowish scales, covering the front, and surrounded laterally and behind with brown scales and some long brown hairs ; some white scales on the hinder border of the eyes. Proboscis deep brown, somewhat spotted with white scales, with a ring of white in the middle and another rather broader one immediately before the terminal lobes. Palpi rather more than $\frac{1}{2}$ the length of the proboscis, deep brown, the third joint dusted with white scales and the last joint with a few white scales at the extreme apex. Thorax deep brown, densely covered with a mixture of brown and yellowish scales, interspersed with tolerably long brown hairs, three oblong patches of the yellowish scales arranged in a triangle, rather distinctly visible on the anterior portion of the thorax, the apical patch beginning below the anterior border, and the bases of the lower patches reaching a little below the middle of the thorax ; pleuræ deep brown with irregularly dispersed white scales ; scutellum testaceous, with yellowish and brown scales and brown hairs ; metanotum deep brown. Halteres deep brown, the stem testaceous. Abdomen about the width and twice the length of the thorax, almost umber-brown where denuded, very densely clothed with brown and white scales, the latter predominating at the sides of the segments and underneath ; segments fringed with long yellowish hairs. Legs slender. Coxæ deep brown, with white scales. Femora, tibiæ, and tarsi brown, thickly covered with very small white rings and spots, except that in the tarsi of the hind legs the whole of the third, and most of the fourth joint (except at the apex), purely white. In the hind-legs the tibiæ $\frac{3}{4}$ the length of the metatarsus. Wings the length of the abdomen, hyaline, all the veins thickly beset with somewhat broad, more or less elliptical,* brown and yellowish

* I have only seen the wing-scales of this shape in the present species ; it may be a peculiarity of the genus ; those of *Megarrhina* are more or less turbinate, whilst in *Culex* and *Anopheles* they are long and very slender.

scales, chiefly the former, which almost completely cover the wings; veins pale; cilia brownish-grey; purpureous and azure reflections. Auxiliary vein joining the costa almost opposite but somewhat before the base of the first sub-marginal cell; sub-costal cross-vein situated not far before the origin of the second longitudinal vein; middle cross-vein same length as the posterior cross-vein, situated considerably beyond the latter, and about opposite the middle of the posterior branch of the fifth longitudinal vein; anterior branch of the fifth longitudinal vein issuing at a point somewhat nearer opposite to the origin of the second longitudinal than to the tip of the sixth longitudinal; the latter situated opposite the posterior cross-vein; second posterior cell about same width as, but scarcely shorter than, the first sub-marginal cell, its base lying before that of the latter.

Hab.—Elizabeth Bay, near Sydney (Skuse). One specimen.

EXPLANATION OF PLATE.

PLATE XL.

Fig. 1. Venation in wing of *Megarrhina*.

Fig. 2. „ „ „ „ *Culex*.

Fig. 3. „ „ „ „ *Anopheles*.

Fig. 4. „ „ „ „ *Aedes*.

Fig. 5. Diagram illustrating the terminology for the veins and cells as applied to the Culicidæ.

Veins.

Costa (*v. costalis*). a, g.

Transverse shoulder-vein (*v. trans. humeralis*). b.

Auxiliary (*v. auxiliaris*). c.

Sub-costal cross-vein (*v. trans. subcostalis*). p.

1st longitudinal (*v. long. 1ma*). d.

Marginal cross-vein (*v. trans. marginalis*). q.

2nd longitudinal (*v. long. 2da*). s, e, f.

Anterior branch (*v. long. 2da ramus anterior*). e.

Veins—continued :

- Supernumerary cross-vein. r.
 3rd longitudinal (*v. long. 3a*). t, g.
 Middle cross-vein (*v. trans. media*). y.
 4th longitudinal (*v. long. 4a*). x, h, k.
 Anterior branch (*v. long. 4a ramus anterior*). h.
 Posterior cross-vein (*v. trans. posterior*). z.
 5th longitudinal (*v. long. 5a*). x, l, m.
 Anterior branch (*v. long. 5a ramus anterior*). l.
 Incrassation of wing-fold. u, v.
 6th longitudinal (*v. long. 6a*). n.

Cells.

- Costal (*c. costalis*). A.
 Sub-costal (*c. subcostalis*). B.
 Marginal (*c. marginalis*). C.
 1st sub-marginal (*c. submarginalis 1ma*). D.
 2nd sub-marginal (*c. submarginalis 2da*). E.
 1st posterior (*c. posterior 1ma*). F.
 2nd posterior (*c. posterior 2da*). G.
 3rd posterior (*c. posterior 3a*). H.
 1st basal (*c. basalis 1ma*). I.
 2nd basal (*c. basalis 2da*). J.
 Anal (*c. analis*). K.
 Axillary (*c. axillaris*). L.
 Spurious, M.

LIST OF THE AUSTRALIAN *PALÆICHTHYES*,
WITH NOTES ON THEIR SYNONYMY
AND DISTRIBUTION.

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PART I.

The series of papers, of which the present is the first instalment, appears to me to have become necessary, owing to the additions made to the Australian Palæichthyan fauna since the publication of Mr. Macleay's "Appendix" in January, 1884, to the additional information collected as to their distribution in our sub-region, and to certain changes which I have thought it necessary to make in the synonymy of this sub-class, if we are to remain in strict accordance with the "law of priority," approved of by the British Association in 1842, and re-affirmed in 1878.

Under the heading of "Note on *C. (CARCHARIAS) tricuspidatus*" will be found some remarks on the constitution of families, by which it will be seen that I consider that these arbitrary groups of genera should be either very much diminished or very greatly increased in number. I have not however attempted in this paper to make any change in the system adhered to by Dr. Günther in his Catalogue, though feeling fully assured that sooner or later that system must collapse.

The first two families of Dr. Günther's Catalogue, the *Carchariidæ* and the *Lamnidæ*, are the subject of this part. Of these twenty authentic and two doubtful species are mentioned. Of the twenty-two, five are not included in Mr. Macleay's list, one of which (*Carcharias macrurus*) has only recently been described by Dr. Ramsay and myself; two (*C. acutus* and *C. menisorrhæ*)

are well known tropical forms; and the remaining two are those previously mentioned as doubtful, namely, *C. tricuspidatus* of whose specific value I confess myself sceptical, and *Lamna cornubica* of whose correct identification I am equally sceptical.

With respect to the synonymy the following changes are proposed, and the reasons for each plainly set forth under their individual headings—*Sphyrna* for *Zygæna*, *Isurus* for *Lamna*, and *Cetorhinus* for *Selache*.

So few Australians take any scientific interest in the distribution of our fishes, that it is almost impossible to gain definite information on that point, absolutely none of an authentic character being attainable except at the main centres of research, such as Sydney, Melbourne, Adelaide, Brisbane, and Hobart, while the vast sea-board of West Australia, with its rich and varied endowment of marine fauna, is so far as we are concerned almost a *terra incognita*. It will therefore be easily understood that the difficulties, which have to be surmounted by naturalists in the attempt to define with any degree of accuracy the limits of the distribution of our species, especially the marine species, are almost insurmountable; and this must be taken as an excuse for the meagreness of the information which I am able to give, since I have only included localities from whence there is an authentic record: in order to make this paper more interesting I have included the south coast of New Guinea in the list of localities.

The species to which an asterisk is prefixed are now for the first time included in our fauna.

CAROHARIIDÆ.

CARCHARIAS, Rafinesque (1810).

- *1. *C. ACUTUS*, Rüpp. Burnett R., Q. (*Austr. Mus.*). This example, which is but twelve inches in length, agrees in every point, excepting that mentioned in the paragraph on the succeeding species, with Rüppell's fish, and with a Madras specimen from the collection of Mr. Francis Day.

2. *C. CRENIDENS*, Klunz. Queensland. I have still (*v. Proc. Linn. Soc. N. S. Wales*, X. 1885, p. 464) grave doubts as to the propriety of separating this from the preceding species, the more so that in our example of *C. acutus* the fold on the upper is almost equally as long as that on the lower jaw, and it thus forms, so far at least as that point is concerned, a connecting link between the two fishes. In the absence however of other specimens for comparison I do not feel justified in absolutely rejecting Dr. Klunzinger's species.
3. *C. MUELLERI*, M. & H. Cape York, Q. (*Macleay Mus.*).
4. *C. ACUTIDENS*, Rüpp. Torres Straits (*Macleay Mus.*).

Note on *C. TRICUSPIDATUS*, Day.

In his 'Fishes of India,' p. 713, Mr. Francis Day mentions that the British Museum contains a large South Australian example of this supposititious species. In the Australian Museum collection there are two half-grown mounted specimens—labelled *Odontaspis taurus*—with distinct pits at the root of the caudal fin, and in which, owing perhaps to the mounting, I am unable to detect any trace of spiracles. I have also seen and examined in the flesh a freshly-caught specimen, which had, along with the pre-caudal pits, plainly visible spiracles. In all other points these examples agree precisely with *Odontaspis taurus*, and I cannot therefore see my way at present towards recognizing Mr. Day's species. Prof. McCoy has also noticed (*Prodr. Zool. Vict.*, dec. VII. p. 13) the occasional presence of the pre-caudal pits in *Odontaspis*. In the recent specimen mentioned above the nictitating membrane was present, a character of which Mr. Day has unfortunately omitted all mention from his description, doubtless because he considered it unnecessary in a genus which always possesses these protective appendages to the eye. This variability however has the effect of raising a

far graver and more important question, namely, what differences are sufficient to constitute a family? Is the mere presence or absence of a nictitating membrane, a character which seems to be absolutely immaterial to the well-being of these fishes, unsupported by any other important differences, sufficient? And if this question should be answered in the affirmative how can a scientist with any pretensions to consistency deny a similar rank to such specialized forms as the Hammer-headed Sharks (*Sphyrnina*), the Hounds (*Mustelina*), and others among which *Odontaspis* must be included.

5. C. MACLOTH, *M. & H.* Port Jackson, N.S.W. (*Macleay Mus.*). New Guinea (*Günther*).
6. C. GLAUCUS, *Linn., sp.* Tasmania (*Günther, Allport*). ? New South Wales (*Tenison-Woods*).
7. C. GANGETICUS, *M. & H.* Port Jackson, N.S.W. (*Macleay Mus.*).
- *8. C. MACRURUS, *R. & O.* Port Jackson, Botany and Broken Bays (*Austr. Mus.*), common.
9. C. BRACHYURUS, *Gnth.* Australia (*Günther*). It is possible that the foetus from the Australian coast, mentioned by Dr. Günther as being in the British Museum, may belong to the preceding species.
10. C. MELANOPTERUS, *Q. & G.* Torres Straits and Port Darwin (*Macleay Mus.*). Hobson's Bay (*McCoy, fide Castelnau, Proc. Zool. Soc. Vict. I. p. 217*).
- *11. C. MENISORRAH, *M. & H.* South coast of New Guinea (*Austr. Mus.*).

GALEOCERDO, Muller and Henle (1841).

12. G. RAYNERI, *McD. & B.* Port Jackson, common. The "Tiger shark." This species abounds in our estuaries and creeks, and as it grows to a large size and is very fierce and cunning, it is much and justly dreaded. Most

of the fatalities which from time to time horrify the community, such for instance as that at Ryde and more recently in Lane Cove River, are in all probability attributable to this species; and I am glad to have an opportunity of reiterating in this publication my conviction, recorded previously in several Sydney newspapers, that in view of the many deplorable fatalities which have occurred within the last few years, and of the excessive number of sharks known to infest the waters of our harbour and its tributaries, it is the plain duty of the Government to offer a substantial reward for every large shark killed within its jurisdiction, always providing that the dangerous nature of each individual specimen be certified to by some competent person, so that a repetition of the Victorian fiasco, mentioned by Prof. McCoy (*loc. cit.*), may be avoided; and I am the more impressed with the necessity for a measure such as this which I have briefly sketched, since the prevalence of these pests is undoubtedly due to the reprehensible system now in vogue of discharging the refuse of slaughter-houses and such like rubbish by means of lighters towed down the harbour, which, having been emptied of their load some distance outside the Heads, are immediately, while reeking with blood, brought back up the harbour, and are followed by these keen-scented denizens of the ocean as naturally and as easily as hounds follow the trail of a fox.

GALEUS, Cuvier (1817).

13. G. AUSTRALIS, *Mcl.* Coast of New South Wales, northward at least as far as Port Stephens, common. Hobson's Bay, Vic., common (*McCoy*). Tasmania (*Johnston, as G. canis*). The "School Shark" of Sydney.

SPHYRNA, Rafinesque (1810).

14. S. ZYGÆNA, *Linn., sp.* East and south coasts of Australia; Tasmania. The "Hammer-headed Shark" or "Balance-fish." The generic name *Zygæna* was first applied to a

genus of lepidopterous insects by Otto Fabricius in 1775, and is still in use in a restricted sense: even therefore had this name, given by Baron Cuvier in 1817, been the oldest by which the genus was known, its retention would be inadmissible,† but as a fact three other names have a prior claim. In 1749 Klein (*Pisc. Miss. III. p. 12*) established the genus *Cestracion* for the reception of the "Hammer-headed Shark," the name being derived from a Greek word signifying a "pick-axe," and therefore ominently suitable for this fish; this title however, having been given many years previous to the earliest date decided on by the British Association, cannot be retained; and this is fortunate, since its retention would have entailed endless trouble and confusion, it having subsequently been used very generally, though erroneously, for the Bull-head Sharks (*Heterodontus*). No such objection however can be taken to the name *Sphyrna* proposed for these fishes by Rafinesque (*Ind. It. Sicil.*) in 1810, and adopted by such authorities as Müller, Henle, Gray, and many American systematists; and believing that these authors are correct in their view of the case I have followed them in using the generic name *Sphyrna* for these Sharks. And even if this name were inadmissible Blainville's *Cestrorhinus* (*Prodr. 1816, p. 121*), also an admirable name, takes precedence of Cuvier's *Zyzena*.

MUSTELUS, Cuvier (1817).

15. M. ANTARCTICUS, *Gnth.* New South Wales, common as far north as Broken Bay, beyond which I have been unable to trace them, though doubtless they occur. Victoria, common (*McCoy*). Tasmania, common (*Johnston*). The "Hound" (*Sydney*).

† A parallel instance of the change of a name in consequence of its prior use in a different class, may be found in the substitution by Dr. Günther of *Atypichthys* for *Atypus*, the latter name having been applied to a genus of spiders many years previously by Latreille.

LAMNIDÆ.

ISURUS, Rafinesque (1810).

16. I. GLAUCUS, *M. & H.*, *sp.* Common in the Port Jackson district, and much dreaded by the fishermen, who call it the "Blue Pointer," and credit it with being the boldest of all the larger sharks which frequent our coast. Instances of its leaving the marks of its teeth on an oar or the timbers of a boat are said to be not uncommon, and even so far does it carry its boldness that Dr. Ramsay has told me of a case of its striking and piercing the timbers of a boat so far as to be unable to withdraw its snout; it is however with no sinister design on the crew that these occurrences take place, but simply due to the reckless eagerness with which it pursues hooked fish. Touching the adoption of the name *Isurus*, I feel bound for reasons given above to adhere to the oldest name subsequent to 1766, and since Rafinesque founded this genus for the reception of the Mediterranean species in 1810, seven years previous to Cuvier's *Lamna*, and at the least twenty-three to that of Agassiz's *Oxyrhina*, I can have no hesitation in making my choice of a name. The spiracles are present, but in a rudimentary condition, and are situated rather nearer to the eye than to the first gill-opening.

Note on LAMNA CORNUBICA, *Gmel.*, *sp.*

- Mr. Allport in his MS. list of Tasmanian fishes includes the above species, but I am inclined to think that on a re-examination of fresh specimens it will be found necessary to change the nomenclature of the Tasmanian species of *Isurus*.

CARCHARODON, Smith (18—).

17. C. RONDELETHI, *M. & H.* Coast of New South Wales, northwards at least to Broken Bay. It is the most numerous of the larger Sharks found in our seas, and is known in

this neighborhood as the "White Pointer," and being quite equal in ferocity to *Galeocerdo rayneri* is even more dreaded than that species. McCoy records it as rare in Hobson's Bay, while Johnston makes no mention of its occurrence on the Tasmanian coast; Günther however mentions that the jaws of a specimen, which measured no less than thirty-six and half feet, from Port Faurey, W. Australia, are in the British Museum.

ODONTASPIS, Agassiz (prior to 1837).

18. O. TAURUS, *Rafn., sp.* Coast of New South Wales, at least as far north as Port Jackson, where it is well known to the fishermen as the "Grey Nurse." Victoria; the most common of the larger sharks in Hobson's Bay, and called the "Shovel-nose Shark" (*McCoy*). Tasmania, not uncommon (*Johnston*).

ALOPIAS, Rafinesque (1810).

19. A. VULPES, *Gmel., sp.* The "Fox Shark," "Thresher," or "Long-tailed Shark." Neighborhood of Port Jackson (*Macleay Mus.*). Hastings, Vic., two specimens (*McCoy*). Tasmania (*Allport*).

CETORHINUS, Blainville (1810).

20. C. MAXIMUS, *Gunn., sp.* A single specimen of the "Basking Shark," captured off Portland, Vic., in November 1883, gives the species a right to a place in our fauna, and is further remarkable as being hitherto the only authenticated record of its occurrence south of the equator. The generic name *Cetorhinus* having been used by Blainville (*Bull. Soc. Philom.* 1810, p. 121) for this shark many years previous to that of *Selache* by Cuvier (*Règne Anim. 2nd. ed. II.* 1829, p. 391), and being pre-eminently applicable to this Whale-like form, is assuredly the correct title to give it.

A LIST OF THE BIRDS FOUND IN THE COUNTY OF CUMBERLAND, NEW SOUTH WALES.

By A. J. NORTH, F.L.S.

The County of Cumberland is about sixty-three miles long by forty miles wide, contains an area of 914,880 acres, and exhibits an avi-fauna as varied as its flora and geological features. The dense scrubs of the coast here attract many stragglers from both the northern and southern colonies, and the whole avi-fauna exhibits most of the characteristic forms for which Australia is so notably peculiar.

It is bounded on the north by the Hawkesbury River, west and south by the Nepean and Cataract Rivers, and on the east by the Pacific Ocean.

This list has been compiled mostly from specimens that have come under my notice during the last two years, many of which have been sent as donations to the Australian Museum. The numbers refer to Dr. Ramsay's "Tabular List of Australian Birds (1888)," to which I would refer anyone wishing to obtain a knowledge of the range of the species over the Australian Continent.

1. CIRCUS ASSIMILIS, *Jard. & Selby.*
2. CIRCUS GOULDI, *Bonap.*
3. ASTUR CINEREUS, *Vieill.*
6. ASTUR APPROXIMANS, *Vig. & Horsf.*
9. ACCIPITER CIRRHOCEPHALUS, *Vieill.*
10. AQUILA AUDAX, *Lath.*
12. HALIETUS LEUCOGASTER, *Gmel.*
14. HALIASTUR SPHENURUS, *Vieill.*
15. MILVUS AFFINIS, *Gould.*
21. FALCO MELANOGENYS, *Gould.*
24. FALCO LUNULATUS, *Lath.*
26. HIERACIDEA ORIENTALIS, *Schleg.*

27. *TINNUNCULUS CENCHROIDES*, *Vig. & Horsf.*
28. *PANDION LEUCOCEPHALUS*, *Gould.*
29. *STRIX NOVÆ-HOLLANDIÆ*, *Steph.*
33. *STRIX DELICATULA*, *Gould.*
34. *NINOX BOOBOOK*, *Lath.*
37. *NINOX MACULATA*, *Vig. & Horsf.*
38. *NINOX CONNIVENS*, *Lath.*
41. *ATHENE STRENUA*, *Gould.*
43. *ÆGOTHELES NOVÆ-HOLLANDIÆ*, *Vig. & Horsf.*
45. *PODARGUS STRIGOIDES*, *Lath.*
55. *EUROSTOPODUS ALBIGULARIS*, *Vig. & Horsf.*
57. *CHÆTURA CAUDACUTA*, *Lath.*
59. *HIRUNDO NEOXENA*, *Gould.*
61. *PETROCHELIDON NIGRICANS*, *Vieill.*
62. *LAGENOPLASTES ABIEL*, *Gould.*
64. *CYPSELUS PACIFICUS*, *Lath.*
65. *MEROPS ORNATUS*, *Lath.*
66. *EURYSTOMUS PACIFICUS*, *Lath.*
67. *DACELO GIGAS*, *Bodd.*
71. *HALCYON SANCTUS*, *Vig. & Horsf.*
72. *HALCYON PYRRHOPYGIUS*, *Gould.*
77. *ALCYONE AZUREA*, *Lath.*
81. *ARTAMUS SORDIDUS*, *Lath.*
83. *ARTAMUS PERSONATUS*, *Gould.*
88. *ARTAMUS SUPERCILIOSUS*, *Gould.*
89. *PARDALOTUS PUNCTATUS*, *Temm.*
91. *PARDALOTUS ORNATUS*, *Temm.*
92. *PARDALOTUS AFFINIS*, *Gould.*
93. *PARDALOTUS ASSIMILIS*, *Ramsay.*
98. *STREPERA GRACULINA*, *White.*
101. *STREPERA CUNEICAUDATA*, *Vieill.*
105. *GYMNORHINA TIBICEN*, *Lath.*
108. *CRATICUS TORQUATUS*, *Lath.*
117. *GRALLINA PICATA*, *Lath.*
118. *GRAUCALUS MELANOPS*, *Lath.*
119. *GRAUCALUS MENTALIS*, *Vig. & Horsf.*

- 126. LALAGE TRICOLOR, *Swains.*
- 127. PACHYCEPHALA GUTTURALIS, *Lath.*
- 131. PACHYCEPHALA RUFIVENTRIS, *Lath.*
- 140. COLLYRIOCINCLA HARMONICA, *Lath.*
- 150. FALCUNCULUS FRONTATUS, *Lath.*
- 152. OREOICA CRISTATA, *Lewin.*
- 154. CHIBIA BRACTEATA, *Gould.*
- 155. RHIPIDURA ALBISCAPA, *Gould.*
- 158. RHIPIDURA RUFIFRONS, *Lath.*
- 161. SAULOPROCTA MOTACILLOIDES, *Vig. & Horsf.*
- 163. SEISURA INQUIETA, *Lath.*
- 166. MYIAGRA RUBECULA, *Lath.*
- 171. MICRÆGA FASCINANS, *Lath.*
- 174. MONARCHA MELANOPSIS, *Vieill.*
- 180. GERYGONE ALBIGULARIS, *Gould.*
- 182. GERYGONE FUSCA, *Gould.*
- 190. SMICRORNIS BREVIROSTRIS, *Gould.*
- 192. ERYTHRODRYAS ROSEA, *Gould.*
- 194. PETRÆCA LEGGII, *Sharpe.*
- 195. PETRÆCA GOODENOVII, *Vig. & Horsf.*
- 206. EÖPSALTRIA AUSTRALIS, *Lath.*
- 215. MENURA SUPERBA, *Davies.*
- 218. PSOPHODES CREPITANS, *Vig. & Horsf.*
- 220. MALURUS CYANEUS, *Ellis.*
- 222. MALURUS LAMBERTI, *Vig. & Horsf.*
- 240. STIPITURUS MALACHURUS, *Lath.*
- 241. SPHENURA BRACHYPTERA, *Lath.*
- 247. HYLACOLA PYRRHOPYGIA, *Vig. & Horsf.*
- 248. PYCNOPTILUS FLOCCOSUS, *Gould.*
- 252. CISTICOLA RUFICEPS, *Gould.*
- 253. SERICORNIS CITREOGULARIS, *Gould.*
- 256. SERICORNIS FRONTALIS, *Vig. & Horsf.*
- 259. SERICORNIS MAGNIROSTRIS, *Gould.*
- 262. ACANTHIZA PUSILLA, *Lath.*
- 268. ACANTHIZA NANA, *Vig. & Horsf.*
- 269. ACANTHIZA LINEATA, *Gould.*

270. *GEOBASILEUS REGULOIDES*, *Vig. & Horsf.*
271. *GEOBASILEUS CHRYSORRHŒA*, *Quoy et Gaim.*
274. *EPHTHIANURA ALBIFRONS*, *Jard. & Selby.*
279. *ORIGMA RUBRICATA*, *Lath.*
282. *CHTHONICOLA SAGITTATA*, *Lath.*
283. *ANTHUS AUSTRALIS*, *Vig. & Horsf.*
284. *CINCLORAMPHUS CRURALIS*, *Vig. & Horsf.*
286. *PTENŒDUS RUFESCENS*, *Vig. & Horsf.*
288. *MEGALURUS GRAMINEUS*, *Gould.*
289. *ACROCEPHALUS AUSTRALIS*, *Gould.*
291. *MIRAFRA HORSFIELDII*, *Gould.*
292. *ZONÆGINTHUS BELLA*, *Lath.*
296. *ÆGINTHA TEMPORALIS*, *Lath.*
300. *STAGONOPLEURA GUTTATA*, *Shaw.*
303. *DONACICOLA CASTANEOTHORAX*, *Gould.*
318. *CINCLOSOMA PUNCTATUM*, *Lath.*
323. *GEOCICHLA LUNULATA*, *Lath.*
328. *AILURŒDUS VIRIDIS*, *Lath.*
330. *PTILONORHYNCHUS VIOLACEUS*, *Vieill.*
342. *MIMETA VIRIDIS*, *Lath.*
347. *CORCORAX MELANORHAMPHUS*, *Vieill.*
349. *CORVUS CORONOIDES*, *Vig. & Horsf.*
350. *CORONE AUSTRALIS*, *Gould.*
356. *MELIORNIS NOVÆ-HOLLANDIÆ*, *Lath.*
357. *MELIORNIS SERICEA*, *Gould.*
358. *LICHMERA AUSTRALASIANA*, *Shaw.*
359. *GLYCIPHILA FULVIFRONS*, *Lewin.*
360. *GLYCIPHILA ALBIFRONS*, *Gould.*
363. *STIGMATOPS OCULARIS*, *Gould.*
366. *PTILOTIS LEWINII*, *Swains.*
372. *PTILOTIS LEUCOTIS*, *Lath.*
373. *PTILOTIS AURICOMIS*, *Lath.*
381. *PTILOTIS FUSCA*, *Gould.*
382. *PTILOTIS CHRYSOPS*, *Lath.*
390. *MELIPHAGA PHRYGIA*, *Lath.*
397. *ACANTHOCHÆRA CARUNCULATA*, *Lath.*

- 398. ANELLOBIA MELLIVORA, *Lath.*
- 400. PHILEMON CORNICULATUS, *Lath.*
- 405. ACANTHORHYNCHUS TENUIROSTRIS, *Lath.*
- 408. MYZOMELA SANGUINOLENTA, *Lath.*
- 413. ENTOMYZA CYANOTIS, *Swains.*
- 416. MELITHREPTUS BREVIROSTRIS, *Vig. & Horsf.*
- 418. MELITHREPTUS LUNULATUS, *Shaw.*
- 423. MYZANTHA GARRULA, *Lath.*
- 427. MANORHINA MELANOPHRYS, *Lath.*
- 428. DICÆUM HIRUNDINACEUM, *Shaw.*
- 430. ZOSTEROPS CÆRULESCENS, *Lath.*
- 436. ZOSTEROPS WESTERNENSIS, *Quoy et Gaim.*
- 438. CLIMACTERIS SCANDENS, *Temm.*
- 440. CLIMACTERIS ERYTHROPS, *Gould.*
- 443. CLIMACTERIS LEUCOPHCEA, *Lath.*
- 446. SITTELLA CHRYSOPTERA, *Lath.*
- 453. CACOMANTIS PALLIDUS, *Lath.*
- 454. CACOMANTIS FLABELLIFORMIS, *Lath.*
- 455. CACOMANTIS INSPERATUS, *Gould.*
- 459. CHALCITES PLAGOSUS, *Lath.*
- 461. CHALCITES BASALIS, *Horsf.*
- 465. EUDYNAMIS CYANOCEPHALA, *Lath.*
- 466. CENTROPUS PHASIANUS, *Lath.*
- 467. CACATUA GALERITA, *Lath.*
- 473. CALLOCEPHALON GALEATUM, *Lath.*
- 474. CALYPTORHYNCHUS BANKSII, *Lath.*
- 478. CALYPTORHYNCHUS FUNEREUS, *Shaw.*
- 485. APROSMICTUS SCAPULATUS, *Bechst.*
- 490. PLATYCERCUS PENNANTII, *Lath.*
- 497. PLATYCERCUS EXIMIUS, *Shaw.*
- 502. PSEPHOTUS HÆMATOGASTER, *Gould.*
- 508. EUPHEMA PULCHELLA, *Shaw.*
- 515. PEZOPORUS FORMOSUS, *Lath.*
- 517. LATHAMUS DISCOLOR, *Shaw.*
- 518. TRICHOGLOSSUS NOVÆ-HOLLANDIÆ, *Gmel.*
- 520. TRICHOGLOSSUS CHLOROLEPIDOTUS, *Kuhl.*

- 522. GLOSSOPSITTA CONCINNUS, *Shaw.*
- 524. GLOSSOPSITTA PUSILLUS, *Shaw.*
- 527. PTILINOPUS SWAINSONII, *Gould.*
- 529. PTILINOPUS SUPERRUS, *Temm.*
- 530. MEGALOPREPIA MAGNIFICUS, *Temm.*
- 533. LOPHOLAIMUS ANTARCTICUS, *Shaw.*
- 534. CHALCOPHAPS CHRYSOCHLORA, *Wagl.*
- 535. LEUCOSARCIA PICATA, *Lath.*
- 536. PHAPS CHALCOPTERA, *Lath.*
- 537. PHAPS ELEGANS, *Temm.*
- 550. MACROPYGIA PHASIANELLA, *Temm.*
- 556. TURNIX VARIUS, *Lath.*
- 560. TURNIX VELOX, *Gould.*
- 563. COTURNIX PECTORALIS, *Gould.*
- 564. SYNOICUS AUSTRALIS, *Lath.*
- 565. SYNOICUS DIEMENENSIS, *Gould.*
- 568. EXCALFATORIA AUSTRALIS, *Gould.*
- 573. ŒDIONEMUS GRALLARIUS, *Lath.*
- 575. HAEMATOPUS LONGIROSTRIS, *Vieill.*
- 578. LOBIVANELUS LOBATUS, *Lath.*
- 580. SARCIOPHORUS PECTORALIS, *Cuv.*
- 581. CHARADRIUS FULVUS, *Gmel.*
- 582. SQUATAROLA HELVETICUS, *Linn.*
- 590. ÆGIALITIS NIGRIFRONS, *Cuv.*
- 592. ÆGIALITIS RUFICAPILLA, *Temm.*
- 595. TOTANUS INCANUS, *Gmel.*
- 612. LIMOSA UROPYGIALIS, *Gould.*
- 613. GALLINAGO AUSTRALIS, *Lath.*
- 615. NUMENIUS CYANOPUS, *Vieill.*
- 616. NUMENIUS UROPYGIALIS, *Gould.*
- 627. ARDEA PACIFICA, *Lath.*
- 628. ARDEA NOVÆ-HOLLANDIÆ, *Lath.*
- 629. HERODIAS ALBA, *Linn.*
- 631. HERODIAS MELANOPUS, *Wagl.*
- 636. NYCTICORAX CALEDONICUS, *Lath.*
- 637. BOTAURUS POICILOPTERUS, *Wagl.*

- 638. BUTOROIDES MACRORHYNCHA, *Gould.*
- 641. ARDETTA MINUTA, *Linn.*
- 642. PORPHYRIO MELANOTUS, *Temm.*
- 650. HYPOTÆNIDIA PHILIPPENSIS, *Linn.*
- 651. RALLUS BRACHIPUS, *Swains.*
- 654. PORZANA FLUMINEA, *Gould.*
- 655. PORZANA PALUSTRIS, *Gould.*
- 657. CYGNUS ATRATUS, *Lath.*
- 668. ANAS SUPERCILIOSA, *Gmel.*
- 669. ANAS CASTANEA, *Eyton.*
- 676. BIZIURA LOBATA, *Sharv.*
- 677. PODICEPS CRISTATUS, *Linn.*
- 678. PODICEPS NESTOR, *Gould.*
- 679. PODICEPS NOVÆ-HOLLANDIÆ
- 683. LARUS PACIFICUS, *Lath.*
- 684. XEMA NOVÆ-HOLLANDIÆ, *Steph.*
- 687. STERCORARIUS ANTARCTICUS, *Less.*
- 689. HYDROCHELIDON HYBRIDA, *Pall.*
- 692. STERNA MEDIA, *Horsf.*
- 693. STERNA BERGII, *Licht.*
- 695. STERNA FRONTALIS, *Gray.*
- 700. STERNULA NEREIS, *Gould.*
- 711. DIOMEDEA EXULANS, *Linn.*
- 714. DIOMEDEA MELANOPHRYS, *Temm.*
- 718. FULMARUS GIGANTEUS, *Gmel.*
- 729. ÆSTRELATA COOKII, *G. R. Gray.*
- 734. PUFFINUS SPHENURUS, *Gould.*
- 736. PRION TURTUR, *Smith.*
- 737. PRION ARIEL, *Gould.*
- 746. PLOTUS NOVÆ-HOLLANDIÆ, *Gould.*
- 747. SULA SERRATOR, *Banks.*
- 751. GRACULUS NOVÆ-HOLLANDIÆ, *Steph.*
- 753. GRACULUS LEUCOGASTER, *Gould.*
- 754. GRACULUS MELANOLEUCUS, *Vieill.*
- 755. GRACULUS STICTOCEPHALUS, *Bonap.*
- 756. PELECANUS CONSPICILLATUS, *Temm.*

The following species can only be regarded as stragglers in the County of Cumberland :—

- 154. CHIBIA BRACTEATA, *Gould.*
- 314. PITTA STREPITANS, *Temm.*
- 326. SERICULUS MELINUS, *Lath.*
- 351. CALORNIS METALLICA, *Temm.*
- 360. GLYCIPHILA ALBIFRONS, *Gould.*
- 444. ORTHONYX SPINICAUDUS, *Temm.*
- 464. SCYTHROPS NOVÆ-HOLLANDIÆ, *Lath.*
- 527. PTILINOPUS SWAINSONII, *Gould.*
- 529. PTILINOPUS SUPERBUS, *Temm.*
- 710. PHAETON RUBRICAUDA, *Bodd.*

NOTES AND EXHIBITS.

Mr. Sidney Olliff sent for exhibition a beautiful Noctuid of the genus *Phyllodes*, nearly allied to the Amboynese *P. conspicillator*, Cram., which he proposed to call *P. Meyricki*. One specimen from Mount Bellenden-Ker, Queensland, has been in the collection of the Australian Museum for some time, and more recently a specimen was received from Mr. C. French for identification, but without information as to its exact habitat.

Mr. Whitelegge exhibited a specimen of an earthworm (*Allolobophora turgida*, Eisen) with two tails, found at Summer Hill.

Mr. Skuse exhibited the Diptera described in his paper

ANNUAL GENERAL MEETING.

30TH JANUARY, 1889.

P R E S I D E N T ' S A D D R E S S .

When I last had the honour of addressing this Society, rather more than a year ago, many persons were endeavouring to get the Centenary celebrated with universal rejoicings. The most absurd proposals were heard exploding in all directions, in the vain effort to stimulate an enthusiasm which had no substance or basis. Each agitator called upon everybody else to be enthusiastic, but no symptoms of enthusiasm were visible, excepting those which were well paid for out of the public purse.

But no one can deny that we have kept our Centennial year in a way not lightly to be forgotten. With political squabbling and scuffling inside and outside Parliament, with strikes among shearers, coalminers, and mariners on grounds incredibly slight, and accompanied by symptoms of a dangerous want of self-control, with clamour against Chinese labour, and affected terror of invasion by Chinese hordes, and with a disastrous drought over the greater part of the territory, we must admit that we have something to remember. We close the year very consistently with a battle-royal between Protection and Free Trade. Yet the community as a whole has kept an even course, undisturbed by all this skirmishing on its frontiers—and the prosecution of scientific and literary studies has certainly shown no signs of enfeeblement.

One enterprise indeed seems to require special mention, though it is not for me to enter into details. That is the inauguration of the Australasian Association for the Advancement of Science (mainly due to the perseverance of Professor Liversidge), which will, we trust, grow by degrees into an institution as potent for

the extension of human knowledge as those of Britain (the parent of all), of America and of Germany.

The Linnean Society of New South Wales numbers at present 174 members, 11 having been removed by death, resignation or otherwise, and 15 new members having been elected during the year.

The Council has elected Mr. W. M. Bale, F.R.M.S. of Melbourne, and the Rev. T. Blackburn, B.A. of Adelaide, as Corresponding Members.

Three members have deceased in the course of 1888, The Right Hon. W. B. Dalley, Mikluho-Maclay, and Dr. Ewan.

THE RIGHT HONOURABLE W. B. DALLEY.—It would be an unreasonable and needless repetition of eulogies, the echoes of which have not yet died away, if I were to indulge in any particular reminiscences of our departed friend; of his generosity, wit, and extraordinary capacity. For his name is known, as that of no other Australian is, throughout the British people, outspread and dispersed as they are over the habitable globe; and that one action of his by which all at once his fame was won has thrown a fresh and splendid illumination upon the hidden strength and unrecognized resources of that vast Society. I turn from these thoughts, which indeed are hardly in keeping with the purpose of this address, and about which there may perhaps be some difference of opinion, to one smaller remembrance in which we all equally partake, and in which we cannot but be unanimous. I refer to his speech at the dedication of this Linnæan Hall, a little more than three years ago, in which he proposed the health of the donor, and in the unlaboured sentences of which we see disclosed, incidentally and unconsciously, something of that enthusiastic and affectionate disposition which formed a main element in his character, and which was perhaps more attractive and engaging than all his other great qualities. Mr. Dalley was an original Member of the Society.

NIKOLAI NIKOLAEVITCH

MIKLUHO-MACLAY died in St. Petersburg in April last. Of an ancient Cossack family, he was born on his father's estate in the Ukraine in 1846. At the age of nineteen he commenced the study of jurisprudence at Heidelberg, which however he soon abandoned for the more congenial pursuit of Natural Science, and especially of Comparative Anatomy, at Jena and Leipzig. After many extensive excursions (in part at least in the company of Prof. Haeckel), reaching as far as the Canaries on the one side and the Red Sea on the other, we find him at Messina with Dr. Dohrn engaged in zoological researches. It was here that the difficulties which beset their investigation convinced them that the most important means for assisting the advance of Biological Science was the establishment of what we now-a-days call Biological Stations. From this conviction has grown the great institution at Naples, the parent of many. Maclay took great pains to have such a station established here, and with some success. But the building which was erected has been required for the purposes of military defence, and the matter is now in abeyance.

I shall not attempt to follow the course of Maclay's travels, which may be found in a very full notice of his travels and labours by Dr. O. Finsch. (*Deutsche Geographische Blätter*, xi. 3 and 4). It is sufficient to refer to his solitary residence among the wild Papuans of Astrolabe Bay during a period of 17 months, from which he was rescued, more dead than alive, by a Russian Man-of-War.

I proceed to mention that he arrived in Sydney for the first time in July 1878, when he became the guest of our friend Mr. Macleay, leaving again in March 1879, for New Guinea and Melanesia. Returning to Australia he remained for some months in Queensland, pushing his investigations as usual, until in January 1881 he again re-appeared in Sydney. After another trip in the *Wolverine* to the S.E. of New Guinea, he left us for St. Petersburg, in order to make arrangements for the publication

of his travels, the cost of which the Emperor undertook. He returned in 1883, and not long after married Mrs. R. Clarke, a daughter of Sir John Robertson. Maclay again left Sydney, and for the last time, in 1886.

He contributed no less than 34 papers and notes to the Proceedings of this Society, which will be found in Vols. III. IV. VI. VIII.-X. These are generally very brief but pregnant observations. In conjunction with Mr. Macleay he also drew up three papers on the "Plagiostomata of the Pacific," which appeared in Vols. III. VIII. X. respectively.

The Bibliographical notice at the end of Dr. Finsch's sketch, quoted above, is probably complete for the later portion, but is very or quite deficient as regards his earlier works; as, for example, his researches in the Calcispongia,* and his essays on the "Brain of Vertebrates."† In an obituary notice of Mikluho Maclay which appeared in "Nature," xxxvii. 597 (1888), it is stated that the records of his travels with their rich anthropological results are to be found mainly in the Proceedings of the Batavia Society, and the Russian Geographical Society.

It seems right to add that he always disclaimed the title of Baron, which somehow or other got prefixed to his name before his arrival in Sydney, probably at Hongkong or Singapore. He found it, however, impossible to shake it off, perhaps owing at first to his imperfect English, and finally, I suppose, came to acquiesce in it as a matter of no importance.

Dr. EWAN, of Sydney, who became a member in 1882, died in England, after an absence of nearly two years from the colony.

*I find the following quoted by v. Lendenfeld, P.Z.S. 1886, p. 633:—

1. Ueber *Guanoha blanca*, einen neuen Kalkschwamm. Jen. Z. Nat. Bd. iv. 1868.
2. Ueber einige Schwämme des nördlichen Stillen Oceans u.s.w. Mém. Ac. Pétersb. Sér. 7, tom. xv. 1870.
3. Schwammfauna des Weissen Meeres, und des Arktischen Oceans. Bull. Ac. Pétersb. tom. xv. 1871.

† Beiträge zur. vergl. Neurol. Das Gehirn d. Selachier, Ganoiden, u. Teleosteen Leipz. 1870, 4to.

The Library of the Society has been enriched during the past year by many donations of books, among which must be mentioned :—

1. *From the Government of Victoria—*

Iconography of Australian Species of Acacia, F. v.
Mueller, K.C.M.G., &c. v.-XIII.

Prodromus of the Zoology of Australia, F. M'Coy, F.R.S.,
&c. XIII.-XVI.

2. *From the Government of South Australia—*

Forest Flora of South Australia, pt. 8, J. E. Brown, F.L.S.

3. *From the American Philosophical Society, Philadelphia—*

Proceedings, &c. Vols. xv.-xxiv.

4. *From the U.S.A. Geological Survey—*

Annual Reports, i.-iv., from the Director.

5. *From the Royal Society of Edinburgh—*

A large donation of past Transactions and Proceedings.

6. *From the Hon. William Macleay—*

Donovan's Exotic Insects, 3 vols. China, India, New
Holland.

Fisheries Exhibition Literature, 14 vols.

American Naturalist. Vols. i.-xx.

Microscopic Journal, 1841, 1842.

Transactions of Microscopical Society. Vols. i.-III.

Quarterly Journal of Microscopical Science, 29 vols.

Quarterly Journal of Geological Society. 1st Series,
8 vols. 2nd Series, Vols. i.-xxii.

Philosophical Transactions, 1665-1800 (abridged).

Proceedings of American Association for Advancement of
Science. Vols. i.-xxxv.

Revision of the Echini, by A. Agassiz.

A large number of Scientific Journals, Magazines, &c., complete for 1887, and in continuation, viz.—

The Athenæum.

Annals and Magazine of Natural History.

Archiv für Naturgeschichte.

English Mechanic.

Entomologist.

Entomologists' Monthly Magazine.

The Field.

Geological Magazine.

The Ibis.

Journal of Anatomy and Physiology.

Journal of Botany.

Nature.

Proceedings of the Royal Geographical Society.

Quarterly Journal of Microscopical Science.

Science Gossip.

The Zoologist.

The Scottish Geographical Magazine.

Subjoined is a list of the Learned Societies, Institutions, Government Departments and Journals with which this Society is in correspondence.

NEW SOUTH WALES.

Sydney—Australian Museum, College Street.

„ Free Public Library, Bent Street.

„ Parliamentary Library, Macquarie Street.

„ Royal Society of New South Wales.

„ University Library.

„ Department of Mines.

VICTORIA.

Melbourne—Field Naturalists' Club of Victoria.

„ Public Library.

„ Royal Society of Victoria.

Melbourne—University Library.

„ Zoological and Acclimatization Society of Victoria.

„ Department of Mines and Water Supply.

SOUTH AUSTRALIA.

Adelaide—Botanic Garden.

„ Parliamentary Library.

„ Royal Society of South Australia.

„ Public Library.

QUEENSLAND.

Brisbane—Parliamentary Library.

„ Queensland Museum.

„ Royal Society of Queensland.

Townsville—Geological Survey.

WESTERN AUSTRALIA.

Perth—Parliamentary Library.

TASMANIA.

Hobart—Royal Society of Tasmania.

„ Parliamentary Library.

NEW ZEALAND.

Auckland—Museum.

Christchurch—Museum.

Otago—Museum.

Wellington—Colonial Museum.

ENGLAND.

Cambridge—Philosophical Society.

Leeds—Conchological Society of Great Britain and Ireland.

London—British Museum.

„ British Museum (Natural History), South Kensington.

„ Entomological Society, Chandos St.

„ Geological Society, Burlington House.

London—Linnean Society, Burlington House.
 „ Zoological Society, Hanover Square.
 „ Royal Microscopical Society, King's College.
 „ Royal Society, Burlington House.
 Oxford—University Museum.

SCOTLAND.

Edinburgh—Royal Society.
 „ University Museum.
 „ Royal Physical Society.

IRELAND.

Dublin—University Museum.
 „ Royal Dublin Society.

CANADA.

Montreal—Montreal Society of Natural History.
 „ Royal Society of Canada.
 Ottawa—Geological and Natural History Survey, Sussex Street,
 Ottawa.
 Toronto—The Canadian Institute.

UNITED STATES OF NORTH AMERICA.

Boston—Boston Society of Natural History.
 „ American Academy of Arts and Sciences.
 Cambridge, Mass.—Museum of Comparative Zoology at Harvard
 College.
 Cincinnati—Society of Natural History.
 New York—American Museum of Natural History.
 „ New York Academy of Sciences.
 „ The Editor of "Journal of Comparative Medicine
 and Surgery," Botanic Gardens.
 „ American Geographical Society.
 Philadelphia—Academy of Natural Sciences.
 „ The Editor of "American Naturalist."
 „ American Philosophical Society.
 „ Wagner Free Institute of Science.

San Francisco—Californian Academy of Natural Sciences.

Washington—Smithsonian Institution.

„ United States National Museum.

„ United States Geological Survey.

„ Department of Agriculture.

Baltimore—Johns Hopkins University.

Granville, Ohio—Denison University.

New Haven—Connecticut Academy of Arts and Sciences.

Salem, Mass.—Essex Institute.

FRANCE.

Cherbourg—Société Nationale des Sciences exactes et naturelles
et Mathématiques de Cherbourg.

Paris—Académie des Sciences de l'Institut de France.

„ Feuille des Jeunes Naturalistes.

„ Jardin des Plantes.

„ Société Entomologique de France.

„ Société Zoologique de France.

„ The Director of the "Journal de Conchyliologie.

Marseilles—Musée d'Histoire Naturelle de Marseille.

Caen—Société Linnéenne de Normandie.

BELGIUM.

Antwerp—Société Royale de Géographie d'Anvers.

Brussels—L'Académie Royale des Sciences, des Lettres et des
Beaux-Arts de Belgique.

„ Société Entomologique de Belgique.

„ Société Royale Malacologique de Belgique.

„ Société Royale de Botanique de Belgique.

Liège—Société Royal des Sciences de Liège.

„ Société Royale Géologique de Belgique.

ITALY.

Genoa—Museo Civico di Storia Naturale.

Naples—Zoological Station.

GERMANY.

Berlin—The Editor of "Archiv für Naturgeschichte."

„ Gesellschaft für Erdkunde.

Bonn—Naturhistorische Verein der Preussischen Rheinlande und Westfalens.

Bremen—Naturwissenschaftlicher Verein.

Frankfurt on Main—Senckenbergische Naturforschende Gesellschaft in Frankfurt a/M.

Frankfurt on Oder—Naturwissenschaftlicher Verein des Regierungs-bezirkes Frankfurt.

Halle—Kaiserliche Leopoldino-Carolinische deutsche Akademie der Naturforscher zu Halle.

Hamburg—Naturhistorisches Museum der freien Stadt Hamburg.

„ Naturwissenschaftlicher Verein.

Leipzig—Dr. J. Victor Carus, Editor of "Zoologischer Anzeiger."

„ Verein für Erdkunde zu Leipzig.

Stuttgart—Verein für vaterländische Naturkunde in Württemberg.

AUSTRIA.

Vienna—Kaiserlich-Königliche Zoologisch-botanische Gesellschaft.

„ Kaiserlich-Königliche Naturhistorischer Museum.

NETHERLANDS.

Amsterdam—Académie Royale des Sciences.

„ Société Royale de Zoologie, Natura Artis Magistra.

Hague—Nederlandsche Entomologische Vereeniging.

Harlem—Société Hollandaise des Sciences Naturelles à Harlem.

RUSSIA.

Moscow—Société Impériale des Naturalistes.

St. Petersburg—Académie Impériale des Sciences.

„ Comité Géologique Institut des Mines.

„ La Société Entomologique de Russie.

Odessa—Société des Naturalistes de la Nouvelle-Russie.

Kieff—La Société des Naturalistes.

RUSSIAN FINLAND.

Helsingfors—Société des Sciences de Finlande.

„ Societas pro Flora et Fauna Fennica.

SWITZERLAND.

Bern—Naturforschende Gesellschaft.

Geneva—Société de Physique et d' Histoire Naturelle de Genève.

SWEDEN.

Stockholm—Entomologiska Foreningen.

Upsal—Société Royale des Sciences.

NORWAY.

Christiania—Kongelige Norske Fredericks Universitet.

DENMARK

Copenhagen—Kongelige Danske Videnskabernes Selskab.

„ Naturhistoriske Forening i Kjobenhavn.

INDIA.

Bombay—Bombay Natural History Society.

Calcutta—Asiatic Society of Bengal.

Geological Survey of India, Indian Museum.

JAVA.

Batavia—Kongl. Natuurk. Vereeniging in Nederl.-Indië.

JAPAN.

Tokyô—College of Science, Imperial University.

Three parts of our Thirteenth Annual Volume, the Third of the Second series have already been presented to members, while the Fourth Part is well in advance. I propose, therefore, as on former occasions, to lay before you a compendious account of the articles contained in its voluminous pages, together with an analysis of their subjects, under each head of which are appended references to the most important papers of a similar nature which have appeared in the Proceedings of the other Learned Societies of Australia, Tasmania, New Zealand, or elsewhere.

Of these Proceedings we have received copies up to the last numbers quoted below, viz:—

Royal Society of New South Wales, Vols. *xxi.*, *xxii.*, Part 1.

Royal Society of Tasmania, 1887.

Royal Society of Victoria, Vol. *xxiv.*

Royal Society of South Australia, Vol. *x.*

Royal Society of Queensland, Vols. *iv.* *v.*, Parts 1-3

Institute of New Zealand, none since 1886.

Royal Geographical Society of Australasia.

New South Wales Branch, Vols. *iii.* and *iv.*

Victoria Branch, none.

Queensland Branch, Vol. *iii.*, Part 1.

The work of the Society for the past year has been carried on by the following Members, viz:—

C. W. DE VIS, M.A., who has contributed two papers, (1) On a Post Pliocene *Hypsiprymnodont* Marsupial, and (2) On the Post Pliocene Avifauna of Queensland. 5 Plates.

Dr. E. P. RAMSAY, F.R.S.E., &c., and J. DOUGLAS OGILBY, F.L.S. (in conjunction).—Three papers upon new species of Fishes.

FREDERICK A. SKUSE.—Five original, comprehensive, and elaborate monographs upon Australian Diptera, viz.: (1) The Cecidomyidæ, (2) The Sciaridæ, (3) The Mycetophilidæ, (4) The Simuliidæ and Bibionidæ, and (5) The Culicidæ. 5 Plates, pp. 128+69+99+24+48.

A. J. NORTH, F.L.S.—Three papers on the Nidification of Australian Birds.

R. ETHERIDGE, jun.—Five (1) On the Fish Remains of the Rolling Downs Formation, 3 Plates; (2) On Ichthyosaurus, and (3) On Plesiosaurus of the same, (4) On Carboniferous and Mesozoic Ferns, 2 Plates; and (5) On an Aboriginal Skeleton from North Harbour.

Baron v. MUELLER, K.C.M.G., &c., &c.—On new species of Plants from W. Australia.

Rev. J. E. TENISON-WOODS, F.G.S., F.L.S., &c.—(1) An extremely full and extensive review of all things concerned with Fish and Fisheries in Malaysia, pp. 90, 2 Plates; (2) Geographical Notes in Malaysia and Asia, pp. 93; (3) Malaysian Land and Freshwater Mollusca, p. 92, 4 Plates.

Dr. OSCAR KATZ.—Three, on subjects connected more or less with Bacteriology.

E. HAVILAND, F.L.S.—On the Flowering Seasons of Australian Plants. No. VIII.

GEORGE MASTERS.—A Catalogue in two parts of all the Known Coleoptera of the Papuan region, pp. 63 + 77.

Rev. W. WOOLLS, Ph.D., &c.—Three, on Australian Sapindaceæ, &c.

Rev. T. BLACKBURN, B.A.—(1) On the Hemiptera of the Hawaiian Islands, (2) Notes on Australian Coleoptera, with descriptions of new species, (3) Further notes on the same, with descriptions of new genera and species.

J. H. MAIDEN, F.L.S., &c.—Three, on Australian Food Plants, &c.

A. SIDNEY OLLIFF, F.E.S.—(1) On Bellenden-Ker Rhopalocera, (2) On a case of Colour Variation in Butterflies, (3) Contribution towards a Knowledge of the Coleoptera of Australia, No. v.

JOHN MITCHELL.—On a new Trilobite from Bowring. Plate XVI. of Vol. II.

The Hon. W. MACLEAY, M.L.C., &c., &c.—Three viz.: (1) On Ophidians from King's Sound, and (2 and 3) On the Insects of King's Sound and its vicinity. pp. 3 + 27 + 19.

Captain F. W. HUTTON.—On the Mueller Glacier, New Zealand, with a postscript. 2 Plates.

G. HURST, M.B., Ch. M.—On the Egg of a Cuckoo supposed to be *Cacomantis insperatus*.

W. W. FROGGATT.—On the Natives of West Kimberley, N. W. Australia.

E. G. W. PALMER.—On Foster Parentage among Birds.

W. M. BALE, F.R.M.S.—On new and rare Hydroids in the Australian Museum collection. 2 Plates.

Rev. J. MILNE CURRAN, F.G.S.—On Carboniferous and Silurian Fossils from Central New South Wales.

W. J. MCKAY, B.Sc.—An original investigation into the development and structure of the Pineal Eye in *Hinulia* (*Lygosoma*) *taeniolata*, and *Grammatophora* (*Amphibolurus*) *muricata*. 3 Plates.

J. D. OGILBY, F.L.S.—(1) On the Destruction of Fish in the National Park by a species of *Saprolegnia*, (2) On a new genus and species of Deep Sea Fish from Lord Howe Island, and (3) Notes on the synonymy and distribution of Australian Palæichthyes.

J. J. FLETCHER, M.A., B.Sc.—(1) On living specimens of *Peripatus Leuckarti*, (2) List of Plants obtained by Mr. Froggatt in W. Australia, (3) Notes on Australian Earthworms, Part 5.

T. G. SLOANE.—A note on the Carenides with descriptions of new species.

J. D. COX, M.D., F.L.S.—On two Wax Figures obtained from an aboriginal camp near Rockhampton. 2 Plates.

T. P. LUCAS, M.R.C.S.E., &c.—Contribution to a knowledge of the genus *Iodis*.

Dr. E. P. RAMSAY, F.R.S.E. &c.—On a new species of *Piezorhynchus* from the New Hebrides Islands.

W. H. MISKIN, F.E.S.—Descriptions of new Australian Rhopalocera.

E. MEYRICK, B.A., F.E.S.—Descriptions of Australian Micro-Lepidoptera, Part xv.—*Ecophoridae* continued.

W. A. HASWELL, M.A., B.Sc.—Lecturer in Biology, Sydney University (1) On simple striated Muscular Fibres, (2) Jottings from the Biological Laboratory of the Sydney University. Nos. x.-xii.

Here follows an Analytical Arrangement of the foregoing.

MAMMALIA.

I. Anthropological.

1. Notes on two human figures made in wax by aborigines near Rockhampton. J. C. Cox, 1223. Pl. xxv., xxvi.
2. On the Natives of W. Kimberley. W. W. Froggatt, 651.
3. On an Aboriginal Skeleton from N. Harbour. R. Etheridge, jun., 1314.

II. General.

1. On the Fauna of the Bellenden-Ker ranges, inc. *Dasyurus*, sp.n. *Phalangista vulpina*, sp.n., &c. E. P. Ramsay, 1299.

AVES.

1. Nests and Eggs of certain Australian Birds. A. J. North, 146. Nest of *Alcyone pulchra*, p. 269; of *Rhipidura preissi* and *Malurus pulcherrimus*, 414.
2. Egg of *Vacomantis insperatus*. G. Hurst, 421.
3. On Sympathy and Fosterage among Birds. E. G. W. Palmer, 740.
4. On *Piezorhynchus sericeus*, sp.nov., from N. Hebrides. E. P. Ramsay, 1293.

REPTILIA.

1. *Dipsas ornata*, n.sp., and *Diemenia angusticeps*, n.sp. from King's Sound, N.W.A. W. Macleay, 416.
2. Pineal Eye in *Hinulia* and *Grammatophora*. W. J. Mackay, 876. Pl. xxii.-xxiv.

Royal Society of South Australia.

List of the Ophidia of South Australia. A. Zietz.

PISCES.

1. On the genus *Tetragonurus* of Risso. E. P. Ramsay and J. D. Ogilby, 9. *Tripterygium*, n.sp., 419. *Parascyllium*, n.sp., *Histioporus*, n.sp., 1310.
2. *Sternoptychides*, n.g. J. D. Ogilby, 1313. Australian Palæichthyes, p. 1765.
3. The Fishes and Fisheries of the Oriental (Malaysian) Region J. E. Tenison-Woods, 165-255. Pls. v.-vi.
4. Note on *Urolophus testaceus*. W. A. Haswell, p. 1713.

Royal Society of Tasmania.

Several new Fishes are described by R. M. Johnston, W. Saville Kent, and A. Morton.

N.B.—Vol. xxii. of the Challenger Reports contains an account of the Deep Sea Fishes, by Dr. Günther.

MOLLUSCA AND MOLLUSCOIDA.

1. Land and Freshwater Mollusca of Malaysia. J. E. Tenison-Woods, 1003. Pl. xxvii.-xxx.

Royal Society of Queensland, Vol. v.

List of Land Shells recorded from Queensland. C. Hedley.

CRUSTACEA.

On Sacculina infesting Australian Crabs. W. A. Haswell, p. 1711.

Vol. xxiv. of the Challenger Reports is devoted to the Crustacea Macrura, by C. Spence Bate, F.R.S.

INSECTA.

1. Australian Diptera. F. A. A. Skuse, viz : Cecidomyidæ, 17. Pl. II., III. Sciariidæ, 657. Pl. XI. Mycetophilidæ, 1123. Pl. XXXI., XXXII. Simulidæ and Bibionidæ, 1363, Pl. XXXIX. Culicidæ, 1717, Pl. XL.
2. Catalogue of all the known Coleoptera of N. Guinea. G. Masters. Pt. I., 271; Pt. II., 925.
3. Hemiptera of the Hawaiian Islands. Rev. T. Blackburn. 343. Notes on Australian Coleoptera, with description of n.sp., &c., 805. Revision of the genus *Heteronyx*, &c., 1321. Further notes, with descriptions of new genera and species, 1387.
4. Rhopalocera from Mt. Bellenden-Ker, Qld. A. S. Olliff. 394. On Colour Variation in Butterflies, 1250. Contributions towards a Knowledge of the Coleoptera of Australia, No. V., 1511.
5. Insects of King's Sound, N.W. Australia. W. Macleay, viz : Cicindelidæ and Carabidæ, 443; Lamellicornes, 897; Stenonoxes, 1227.
6. Note on the Carenides, with descriptions of new species. T. G. Sloane, 1101.
7. On the genus *Iodis*. T. P. Lucas, 1263.
8. Descriptions of new Australian Rhopalocera. W. H. Miskin, 1514.
9. Descriptions of Australian Micro-Lepidoptera. Pt. XV. E. Meyrick, 1565.

Royal Society of South Australia.

On Australian Coleoptera, several papers by the Rev. T. Blackburn.

VERMES.

1. Notes on Australian Earthworms. Pt. V. J. J. Fletcher, 1521. Royal Society of Victoria. Transactions, Vol. I., Pt. I. The Anatomy of *Megascolides australis* (giant earthworm of Gippsland). W. Baldwin Spencer, B.A., Prof. Biol. Univ. Melb. 5 plates.

CELENTERATA AND PORIFERA.

1. New and rare Hydroida in the Australian Museum. W. M. Bale, 745. Pl. xii.-xxi.
 Note.—Vol. xxiii. of the "Challenger" Reports contains the completion of Professor Allman's monograph on the Hydroida.
 Vol. xxiv. is occupied by the Report on the Tetractinellid Sponges, by Professor Sollas.

MISCELLANEOUS.

1. Bacterioscopical Examination of Sydney Ice. O. Katz, 256.
2. On the Venom of Australian Snakes, 400.
3. On the Cattana Disinfectant, 727.
4. On Simple Striated Muscular Fibres. W. A. Haswell, 1704.
 On a Method of Preparing Blastoderms of the Fowl, 1712.
5. Note on Living Specimens of *Peripatus Leuckarti*. J. J. Fletcher, 892, 1508.

II. BOTANY.

1. *Ptilotus Macleayi*, n.sp., and *Acacia spodiopserma*, n.sp., from W. Australia. F. v. Mueller, 162.
2. Flowering Seasons of Australian Plants, No. viii. E. Haviland, 267.
3. Notes on *Jussiaea repens*, &c W. Woolls, 357. Lemnaceæ, 1247. Australian Sapindaceæ, 1270.
4. Medicinal Plants of N.S.W. J. H. Maiden, 355. Food Plants of Australia, 481. Synonymy of *Ficus scabra*, 1314.
5. On the Destruction of Fish in the National Park by a species of *Saprolegnia*. J. D. Ogilby, 890.
6. List of Plants from N.W. Australia, collected by W. W. Froggatt. J. J. Fletcher, 1256.

Royal Society of N.S. Wales. Vol. xxi.

1. On some N.S.W. Tan-substances. J. H. Maiden, F.R.G.S.
2. The Influence of Bush Fires in the Distribution of Species.
 Rev. R. Collie, F.L.S.

Royal Society of Tasmania, 1887.

Tasmanian Hepaticæ. R. A. Bastow, F.L.S.

Royal Society of Queensland. Vol. v.

The Lichen Flora of Queensland. Pt. I. J. Shirley, B.Sc.

Books.

The Useful Native Plants of Australia and Tasmania. J. H. Maiden, F.L.S., &c. Printed by order of the committee of management, Technological Museum of New South Wales. Sydney: Turner and Henderson. London: Trübner and Co.

III. GEOLOGY AND GEOGRAPHY.

1. On *Triclis oscillans*, an extinct Hysiprymnodont. C. W. DeVis, 5. Pl. i.
Post-Tertiary Avifauna of Queensland, 1277. Pls. xxxii-xxxvi.
2. Fossils of Rolling Downs Formation N.E.A. (Mesozoic) *Otoclus appendiculatus*, *Lamna Daviesii*, sp.n., 156. Pl. iv. *Ichthyosaurus*, sp., 405. Pl. vii. *Plesiosaurus*, sp., 410. Pl. viii. Also Ferns, viz., *Aneimites austrina*, Lower Carb. Pl. xxxvii. *Phlebopteris alethopteroides*, Lower Mesoz. Pl. xxxviii. 1-2. *Didymosorus ? gleichenoides*. Pl. xxxviii. 3. 1300.
3. On the Mueller Glacier, N.Z. F. W. Hutton. 429. Pl. ix., x. and 1259.
4. On *Acidaspis longispinis*, a new Trilobite from Bowning. J. Mitchell, 397.
5. Geographical Notes in Malaysia and Asia. J. E. Tenison-Woods, 557.
6. Carboniferous and Silurian Fossils from Central N.S.W. J. M. Curran, 800.

Royal Society of New South Wales, Vol. xxi.

1. Remains of Vegetable Tissues preserved in Queensland Opal. D. A. Porter.
2. Origin of Gold-bearing veins and of the associated minerals. J. C. B. Seaver, C.E., &c.

3. On the Silt Beds of Port Jackson. F. G. Gipps, C.E.
4. Soils and Sub-soils of Sydney and Suburbs. J. B. Henson, C.E.

Vol. xxii., Part 1.

1. A Sketch of the Geology of N.S.W. is included in the Anniversary Address of the President. C. S. Wilkinson, F.G.S., &c.
2. Forest Destruction and its Effects. W. E. Abbott (with discussion).
3. On some Minerals and Mineral Localities in N.S.W. D. A. Porter.

Royal Society of Tasmania, 1887.

The Tertiary Rocks of Australasia. R. M. Johnston, F.L.S.

Royal Society of Victoria, Vol. xxiv.

On certain Metamorphic and Plutonic Rocks at Omeo. A. W. Howitt, F.G.S.

Royal Society South of Australia, Vol. x.

The Gastropods of the Older Tertiary of Australia. Prof. Tate. Part 1.

Royal Society Queensland.

1. Catalogue of the known Minerals of Queensland. E. B. Lindon, A.R.S.M.
2. *Owenia grata*, an extinct P. Pl. Diprotodont. C. W. DeVis, M.A.

Royal Geographical Society of Australia.

N.S.W. Branch. Vols. iii. and iv., containing the records from January 1, 1885 to December 31, 1886, have recently been published, containing (principally) various papers on the Exploration of New Guinea, with some account of N.W. Australia.

Queensland Branch, Vol. iii., Part 1.

BOOKS, REPORTS, &c.

1. The Minerals of New South Wales. Professor Liversidge. Trübner & Co.

2. In the Records of the Geological Survey of India, Vol. xxi., Part 3, is an article by Dr. Waagen on the Carboniferous Glacial period, of much interest in connection with the evidence of Ice Action in Australia, which has been so much discussed of late. Of this more below.
3. The Report of the Committee of the Royal Society appointed to investigate the phænomena of the Krakatao eruption has now been published. No copy, I believe, has as yet arrived in Sydney, but a Review or brief abstract of its contents by Sir R. S. Ball appears in the Contemporary Review for November, and this is so accessible a periodical that it is unnecessary to do more than give the reference. The paper will be found to be of most extraordinary interest.
4. An elaborate paper on the Mesozoic Mammalia, Marsupialia and Insectivora, by H. F. Osborn has appeared in the Journal of the Academy of Natural Sciences, Philadelphia.
5. The Department of Mines has published in one volume, 4to, Report on the Mineral Products of N.S.W., by Harrie Wood, Under-Secretary for Mines; Notes on the Geology of New South Wales, by C. S. Wilkinson, F.G.S., Geological Surveyor in charge, and Description of the Seams of Coal worked in New South Wales, by John MacKenzie, F.G.S., Examiner of Coalfields.

Also, Memoirs of the Geological Survey of N.S.W., Palæontology No. 1, The Invertebrate Fauna of the Hawkesbury-Wianamatta Series, &c., by R. Etheridge, jun., Palæontologist to the Geological Survey and Australian Museum.

6. In the Bulletin of the Scientific Laboratories of Denison University, Ohio, U.S.A., Aug. F. Foerste describes new species of *Encrinurus*, *Phacops*, *Cyathophyllum*, *Endophyllum*; and a specimen of *Pleurodictyum problematicum* from the Upper Silurian beds at Bowring, near Yass, submitted by our fellowmember, Mr. J. Mitchell.

In the paper by Dr. Waagen mentioned above (Geolog. Jour. Ind. Rec., Vol. xxi., pt. 3), he discusses the upper carboniferous and overlying formations in the Gondwana system of India, the Karoo beds in South Africa, and the Australian coal measures and Hawkesbury-Wianamatta series. The paper was published in German and has been translated for the Records. Dr. W. commences with large extracts from Dr. Blanford's address, Geolog. Sect. Brit. Ass., Montreal, 1884, as giving a satisfactory account of the Indian portion, continues with an account of the African, drawn from the published Memoirs by Wyley, Q.J.G.S., xxiii; Griesbach, *ib.*, xxvii; Sutherland, *ib.*, xxvi; Dunn, *ib.*, xxv, and proceeds to the supposed Australian equivalents, depending here mainly upon the authority of W. B. Clarke. There is nothing very new in this portion of this paper, but it may be as well to summarise it here.

He commences by stating that there are no marine beds of any importance in the peninsula of India, but that in Bengal and Central India a great sequence of freshwater beds is found, known as the Gondwana system.

The uppermost portion in Cutch and about the mouth of the Godávari contains marine beds of uppermost Jurassic or lower Cretaceous age, interstratified with beds containing plants corresponding to the middle Oolites of England. Below these there are no marine fossils, so that no exact determination of period can be made.

The lowest or Talchir beds are shales and sandstones undoubtedly of Glacial origin, being full of huge ice-marked boulders, and resting on ice-grooved surfaces of the Vindhya (Devonian ?) limestones. The Karharbáris, which succeed without any break, are coal measures, with *Vertebraria*, *Glossopteris*, *Gangamopteris*, *Naggarathiopsis*, etc. The next, or Damudas, are also coal measures with a better preserved flora, which bears very close relationship to the preceding. Here also *Estheria* occurs with *Brachyops* and *Gondwanosaurus* (Labyrinthodonts). The Pan-chets complete the Lower Division of the Gondwanas, being

sandstones with remains of Reptiles, *Epicampodon* and *Dicynodon*, and Labyrinthodonts, *Pachygonia*, *Gonioglyptus* and *Glyptognathus*. The flora still bears a general resemblance to that of the older beds, but also presents *Thinnfeldia*, *Odontopteroides*, and *Cyclopteris*.

The base of the upper Gondwanas is formed by the Rájmahál Beds. In these a quite different flora suddenly appears. In the former "more than one half the species are ferns with simple individual fronds and anastomosing venation," i.e., are of the *Glossopteris* type. In the latter, Cycads become far more abundant than any other plants and are associated with *Araucarites*, *Cunninghamites*, etc. The Ferns are also of a later type, as *Gleichenia*, *Dicksonia*, *Macrotaniopteris*, *Asplenites*, &c. *Equisetum* and *Lycopodites* also occur. So far as appears from a comparison of the fossils with those of Europe, the flora would be classed as Rhætic. The Kota-Maleri beds which succeed contain *Hyperodapedon*; the amphiœolian crocodiles *Parasuchus*, *Belodon* and *Thecodontosaurus*; *Pachygonia*, *Mastodonsaurus* and other undetermined Labyrinthodonts; *Ceratodus*, *Lepidotus*, *Tetragonolepis* and *Dapedius*. Here the Ganoid Fishes are Liassic, but *Ceratodus* extends from Permian to Jurassic.

The uppermost beds of the Upper Gondwanas, found at Cutch and about the mouth of the Godávári, contain species of plants found also in the Lower Oolite of England, with *Glossopteris* and *Sagenopteris*, while the marine beds contain mollusca, as has been before said, of Cretaceo-Jurassic age. Thus far Waagen has been mainly quoting Blanford: What follows is his own, drawn from the authorities mentioned above.

The Karoo formation in S. Africa, bears a singular resemblance to the Indian Gondwanas. It is composed of about 7000 feet in thickness of sandstones, resting (unconformably) mainly on the (probably) Carboniferous Table-mountain Sandstones, (which are related—as I understand the author—to *Lepidodendron* beds at Grahamstown and elsewhere), but partly also on the underlying Devonian. The lowest or Ecça beds (equivalents of the Talchirs

acc. W.) consist of glacial conglomerates piled on scored and grooved surfaces of the Table Mountain Sandstone, shales much confused by ice movement, and finally of coal measures containing *Glossopteris*. Above these are the Koonap beds, not yet worked out, but assumed to represent the Damudas; and then the Beaufort shales (equivalent to the Panchets, W.), with abundant Reptilian and some Amphibian remains, and *Glossopteris Browniana*, *Phyllothea*, &c. The Reptiles are described by Owen in B. M. C. Fossil Reptilia of S. Africa, and belong to the Dicynodonta, Theriodonta, and Dinosauria. (*Dicynodon* is found in the Indian Panchets). The Beaufort beds are succeeded by the Stormberg white and red sandstones, and subordinate beds of Shale and Coal (representing the Kota Maleri and Rajmahal, W.). The following ferns have been described:—

Pecopteris (thinnefeldia). Bgt. (sic). Qy. *Thinnefeldia*
odontopteroides?

„ *Sutherlandi*.

Cyclopteris cuneata.

Tæniopteris Daintreei.

“All these are species which occur equally in the uppermost plant bearing beds of Australia.” The skull of a Mammal, *Tritylodon triglyphus*, very closely allied to the genus *Triglyphus* from the Rhætic bone-bed of Würtemberg, has also been found here.

Thirdly, in the Uitenhage deposits we have, as in the Cutch-Godávári of India, an alternation of Plant and Marine beds. The plants are from the European point of view Jurassic, from the Indian, Rájmahál. The Mollusca, (including *Trigonia*, 3 sp.), are Neocomian as compared with those of the Cutch-Godávári beds, which are referable to the Lower Cretaceous (Tithonian) of Europe.

Dr. Waagen gives the results at which he has thus arrived in a table containing also a column of Australian equivalents, which

evidently requires alteration, and which I therefore omit, together with his sketch of the Geology of Eastern Australia.

The general conclusions at which the author arrives may best be stated in his own words.

§ 1. "It is evident that in South Africa, equally with India and Eastern Australia, great rock systems occur, which are rather nearly related to each other, and certainly agree with each other far more closely than with any series yet known in Europe or America. The greater part of these formations are evidently of Freshwater origin; and huge lakes and vast river systems must have occupied the regions where to-day we find the formations in question.

§ 2. "This observation led long since to the assumption of a great continent which in early geological periods extended over a great part of the southern hemisphere, and which in area may not have been greatly less than the present Asia-European continent.

§ 3. "The story of this continent seems to have been a highly singular one. Instead of the great chains of foldings which compose the mountain elevations in the northern hemisphere, and form thus to some extent the skeletons of the continent, we here find table-shaped mountains built up of horizontal rock masses. These, it is true, rest on folded rocks, but the rocks effected (affected) by the folding action are principally archaic (Archæan?). Already in the Devonian period we see the intensity of the folding forces greatly decreased; great regions like South Africa and India [but not Australia?] show the Devonian formations mostly in horizontal positions, and whatever followed was only tilted out of its horizontal position here and there quite locally.

§ 4. "While the fold-making action was decreasing more and more on this part of the earth's surface, immense fallings in appear simultaneously to have led more and more to the breaking up of the once existing vast continent. We know from the distribution of the marine deposits, that in the Jurassic period the

old continents had already been separated into three independent parts ; and that Africa, India and Australia were already divided by arms of the sea ; in the Triassic period, on the contrary, Africa was probably still connected with India, but Australia had already then become independent.

§ 5. "Thus, instead of increasing, the old continents shrank more and more ; and probably at the same rate at which Europe and Asia emerged from the sea, the latter overflowed immense areas that were formerly *terra firma*.

§ 6. "At the present day only small fragments remain of the once existing southern continent, but these by the thickness of the horizontally bedded freshwater formations and the mightiness of the physical conditions which they reveal, allow us to draw conclusions as to the vast extent of the land to which they once belonged.

§ 7. "The rock systems above treated of were none of them deposited till after the cessation of the folding action. We find all the beds nearly horizontal, either forming plateau regions, or occupying shallow basins, and important stratigraphical disturbances are either local, or only to be enumerated as exceptional cases of rare occurrence. The period of the fallings in had commenced before the formation of the above described rock systems had been finally completed. Vast areas which had formerly been *terra firma* were more and more submerged, and the witnesses of these events are the scanty marine deposits which we still meet with along the margins of the few remaining fragments of the ancient continent in Africa, India and Australia.

§ 8. "It was on this continent that in times long gone by events transpired which remind one strongly of the events which happened during the Quarternary Glacial period in the northern hemisphere ; and there was probably a time when this southern continent was covered with vast masses of ice."

The determination of this Glacial period is, according to our author, rendered difficult by the fact that in the Uitenhage, Dutch, and Australian (Muree) beds where marine and fresh

water beds alternate, the plant remains are Jurassic in type, while the marine fauna in the African and Indian formations are Neocomian and Tithonian, in the Australian upper Carboniferous. But a key to the problem is afforded in the Salt Range, which exhibits a succession of beds, from the Devonian to the Eocene, without any important gaps. Here is found, according to Dr. Waagen, whose views, however, have been much combatted by other Indian Geologists, a great boulder formation of evidently glacial origin, ascribed in part to vast glaciers descending from the Arvali and partly to swollen rivers bearing drift ice from the south-east. These boulder beds lie immediately beneath Permian strata, and contain in great abundance *Conularia laevigata*, *C. tenuistriata*, *Aviculopecten lunæformis*, &c. [It is strongly maintained by Oldham and Wynne that these specimens are rolled pebbles, and belong to an older formation.]

"According to all the laws of Synchronism," our author concludes, "there can be no great doubt that the Glacial formations of the Salt Range are to be regarded as approximately contemporaneous with those of Australia, in which the same fauna occurs." "In Australia we have unquestionably lower carboniferous deposits as their foundation. In the Salt Range we have beds of undoubted Permian age overlying them directly." Hence, he concludes, it follows that the Glacial period in question was concurrent with the formation of the upper coal measures in the Northern Hemisphere, and that in Australia, India, and Africa the flora had already assumed a Mesozoic type, while the fauna was still Palæozoic.

Now this flora, both in Australia and Africa, replaces all at once the older carboniferous flora of Calamites and Lepidodendroids, plants which evidently were unable to live under the lower temperatures to which they had become exposed. But this increase of severity did not occur in northern climates, and there, consequently, the same luxuriant and delicate vegetation which had been killed off in these southern regions continued to flourish for long ages of geological time, diminishing at last under

similar circumstances in the Permian, and so at last disappearing altogether from the earth.

It follows that we must regard this new or Mesozoic flora, more hardy and more stunted than that which preceded, to have originated in the Africo-Indo-Australian Continent during the period of refrigeration, and subsequently during a similar alteration in northern climates to have extended itself northwards throughout the whole north temperate zone.

And it is probable that the great revolution which occurred in the marine fauna also, at the close of the Palæozoic period, may be due to the great depression of temperature, which, extending during the Upper Carboniferous period over the whole southern hemisphere (Dr. W. makes an exception of South America), subsequently in Permian times spread over the greater part of the globe. (Dr. W. regards our Hawkesburys as Permian.) I believe that this is a fair abstract of Dr. Waagen's views, which at first sight seem as probable as they are ingenious. But there is something to be said on the other side.

I gave Dr. Waagen's *ipsissima verba* in a rather long quotation above, because that draft on our imagination is a very heavy one, and demands the strictest scrutiny. To the first paragraph (§1) no exception can be taken; the resemblance of the formations is the basis of all speculation upon the relations between the geological structures of South Africa, India, and Australia, and must not be dropped out of sight for a moment. But it does not follow that all the rest of Dr. Waagen's views should be accepted. Some of them appear to me to be more than doubtful. The hypothesis (§2) that a great continent, not Antarctic, nor even all of it south of the equator, united, during and before the Triassic period, Africa, India, and Australia is quite unsupported, and indeed seems to be hardly in accordance with ascertained facts. The land connection between Africa and India, the LEMURIA of Dr. Hartlaub, has been conclusively shown by Wallace—"Island Life," p. 394 sq.—to be (like ATLANTIS) an assumption not only without warrant, but to be

superfluous for the explanation of the phenomena on which it is based, and, moreover, to be inconsistent with the evidence which they give. That Australia was once united with Asia, and that in Mesozoic time, is certain; and that New Zealand was joined about the same time by way of N. E. Australia, or New Caledonia, is very probable. But that Africa and Australia were ever united, except as outliers of an Antarctic continent, is quite contrary to the conclusions fairly drawn from the facts of the case, that is to say, the resemblances and dissimilarities of the fauna and flora.

I am not sure that I understand what is meant by the "falling in" (§4-5-6) of vast regions of the earth's surface; but I am sure that the arguments for the *general* permanence of continental and oceanic areas as such are too strong to be quietly disregarded.

One must also demur to the supposed Glaciation of the supposed Continent (§8). In order to the formation of permanent ice, whether in the form of isolated glaciers or of ice sheets (which are phenomena differing only in degree) these three combined conditions are requisite: (1) Dry land (or at best exceedingly shallow water). (2) High latitude, or high land. (3) An abundant snowfall.

Now it is assumed that there was here in the Mesozoic period such a dry land uniting S. Africa, India and Australia. But of this there is no sort of proof. High latitude is certainly wanting, and even the horizontal formations which are in evidence show that at least where they were in making there was no general glaciation. Moreover, the very extent of the hypothetical continent is fatal to the hypothesis of an extended ice sheet, since, except where very high mountains occur, the interior portions of all continents receive a very restricted rainfall in comparison with the coasts.

I cannot bring myself to entertain this theory of a vast glaciated continent, at any rate in latitudes so low and on both sides of the Equator. And yet such a theory almost necessarily follows from the hypothetical synchronism of the Talchirs, the Ecca conglomerates and Lower Marine Glacial beds. But when any hypothesis

on being pushed to its legitimate consequence develops an absurdity, an impossibility or an extreme improbability, one naturally turns back to the premises. And so it becomes worth while to examine whether there are any substantial grounds for the supposition of contemporaneous glacial action in India, Africa and Australia during the Upper Carboniferous (or Carboniferous-Permian) period.

It will from the foregoing be understood that my use hereafter of the word "glacial" does not imply any belief in a general glaciation or ice sheet, but only in the existence of glaciers in mountain districts, of icebergs floating in marine currents, or of river ice swept down in spring floods.

I do not quite understand why every statement as to Glacial periods, or periods of very considerable local glaciation, older than the Pleistocene should be received with so much distrust and hostile cavil as is the case at present with English Geologists. For at any term during which the fossiliferous sedimentary rocks were being deposited Glaciers would surely be formed wherever the conditions mentioned above were favourable. And these conditions depend both upon general astronomical causes, and upon Geographical modifications which may be either local or general. In the same way, under certain Geographical and Astronomical combined variations, a moist and equable climate may have prevailed, and may again prevail in Arctic and Antarctic regions, though not in both at the same time. There seems to me no sufficient ground for assuming that even during the remotest period of recorded life the internal or residual heat of the globe has had any appreciable effect upon the distribution of living forms upon its surface.

Dr. Croll has enumerated (Climate and Time, p. 292 seq.) a great number of supposed instances of both Glacial and Interglacial periods, beginning with the Cambrian; and, after making all reasonable allowance for bias in the mind of the writer or of his authorities, there must surely remain a basis of truth in the concurrent opinion of so many observers. I may add that Mr. Wilkinson

was strongly impressed with the glacial character of a Silurian conglomerate which he found near Temora (David, Q.J.G.S., XLIII. p. 195.)

Farther, it is accepted by most candid inquirers that Dr. Croll's views as to the Alternation of Extreme and Temperate climates in the Northern and Southern Hemispheres (Climate and Time, p. 75, Chs. XIV.-XVIII., &c.,) are not only theoretically satisfactory, but are also borne out by all such evidence as is obtainable. "The most important result for us," says Darwin, "arrived at by Mr. Croll, is that wherever the Northern Hemisphere passes through a cold period, the temperature of the Southern is actually raised, with the winters rendered much milder, chiefly through changes in the direction of the Ocean currents. So conversely it will be with the Northern hemisphere while the Southern passes through a glacial period." (Origin of Species, Ed. VI., p. 336.) The rest of chapter XII. is taken up with this argument. Wallace, Island Life, p. 151, sq. discusses the same question. It results that an Indian Glacial period must be compared with an Australian Interglacial, and that only the African and Australian (and South American?) periods of Glaciation (in any sense of the word) can have been contemporaneous. We must therefore confine our attention in the first place to the lands south of the Equator, in which the course of events during the Carboniferous and Mesozoic periods seems to have been somewhat as follows, viz. :—

During the later Devonian and older Carboniferous there was developed in the Holarctic regions, a form of vegetation which is known in the Northern Hemisphere as Carboniferous, but which, to avoid ambiguity, I shall call the *Lepidodendron* flora. This gradually extended itself on a restricted scale into the South African and Australian regions without, as it seems, entering the present peninsula of India, which was at that time disconnected from the northern mainland, New Zealand, or even Tasmania.

Eastern Australia at this period consisted of a chain of islands, extending along the line of the present Great Dividing Range,

with outliers towards the west. From the characters of the *Lepidodendron* flora which then flourished there, we conclude that the climate also was insular,—equable, moist and temperate,—at least in the maritime districts. Other considerations lead us to imagine high ranges of mountains in the interior, covered with snow, and with numerous glaciers descending towards the lower ground. The southern Island of New Zealand may be adduced in illustration of the supposed conditions of Eastern Australia at this period. A similar climate seems to have prevailed in the region now known as South Africa. I know nothing of the state of the southern extremity of South America at this time, but in Brazil this Holarctic *Lepidodendron* flora was abundant.

The whole globe indeed seems to have enjoyed, for ages upon ages, a climate uniformly temperate, moist and equable, as is testified by the unanimous evidence of the fossil fauna and flora. But there came a time when these conditions, while remaining unaltered in the Northern Hemisphere, met with a partial reversal in the Southern.

In the Northern regions the *Lepidodendron* flora continued in undiminished luxuriance for vast periods of time, gradually yielding in the Permian to the presence of climates too severe or extreme, and to the competitions of hardier natures. But long before that period it had entirely disappeared from the South. A great change in the climates of South Africa and East Australia took place, affecting the Marine forms of life to an infinitesimal extent, if at all, but sweeping away the whole of the Terrestrial flora. This difference in the results of the change, together with other considerations, leads us to suppose that it was probably consequent on a land connection having been established between Australia and an Antarctic continent, with a coincident disruption of the previously existing communication between Australia and the great northern continent. An extreme or continental climate, with an excessive range of temperature, accompanied by violent floods and corresponding droughts, now superseded the moist and temperate

conditions which had preceded, and under which the *Lepidodendron* flora had flourished. Unable to endure this alteration, the older type of vegetation entirely disappeared from the southern hemisphere, being replaced in favourable positions, such as the East Australian region, by Antarctic forms, which, collectively, I shall call the *Glossopteris* flora.

For long Geological periods this retained its hold upon the countries which it had occupied, sometimes so luxuriant under "equable, moist and temperate conditions," as to produce many great series of coal seams, but also, at intervals and in particular localities, checked by the recurrence of an extreme climate.

Many alternations of elevation and subsidence took place in the meanwhile, but at last (after the formation of the Newcastle Coal) a change occurred, at a time when both S. Africa and Australia were united by the Antarctic continent, which gradually put an end to the existence of *Glossopteris* in these regions, and in course of time replaced it by *Tæniopteris*, *Thinnfeldia*, & c.

This alteration is recorded in S. Africa by the space between the Beaufort and Stormberg beds, in New South Wales by the interval between the Newcastle and Clarence River series, in Victoria by the Bacchus Marsh beds, and in Queensland and Tasmania by broken series of changing character, as at Burrum and Jerusalem, which lead gradually to the coal measures of Ipswich, and of various localities in Tasmania, to the Victorian Carbonaceous series, and to the Clarence River beds of New South Wales.

In both Queensland and Tasmania this latest coal is found in small detached basins, which offer no evidence as to superposition to the surveyor, and can only be provisionally arranged by examination of their very scanty flora. It would therefore appear that subsequent periods of excessive rainfall led to the silting up of these several basins, and also to the erosion of the bars or natural

dams which had previously penned up their swamp waters, and so destroyed the means by which a record of future developments might have been preserved.*

Such a period of excessive precipitation is also indicated by the Hawkesbury sandstone, a fluvatile formation of considerable extent and duration. The flora is little different from the last, but the rivers and lagoons of this region swarmed with Ganoids, which were preyed upon by those Crocodile-Tadpoles known as Labyrinthodonts.†

I suppose this Hawkesbury series to be the latest of all our Mesozoic freshwater deposits, and therefore to lie in a higher horizon than even the latest of the Ipswich coal series, whose apparent passage by undistinguishable stages into the Cretaceous of the Rolling Downs, Paroo, &c., seems very difficult to understand. If, however, such a gradation from the lowest to the highest Mesozoic does really occur in this region, we must regard the formation of the Hawkesbury and Wianamatta beds as an episode in the story. They are certainly later, but very little later (as is shown by their fossil ferns) than the Clarence River, Ipswich and Mersey formations.

In Lithological as well as in Geographical relations they correspond closely to the Triassic of Europe and America, with which their Labyrinthodont remains also unite them.‡

*No change however of importance seems to have taken place until the immigration of the Marsupial Fauna and the Tertiary Flora of the Australian region. No record of these has as yet been discovered, but we may with some probability refer them provisionally to a period immediately previous or immediately subsequent to the great cretaceous formation of this continent.

†I am disposed to think that the Fishes of the great Gosford haul are in part of a Liassic type, a circumstance paralleled by the concurrence of Liassic fish with Triassic Amphibia and Reptiles in the Uppermost Gondwanas. The explanation would appear to be that the fish fauna known as Liassic in Europe partly originated in the vast river systems of the South, more or less contemporary with the Northern Trias, out of which the great Sandstone plateaux of Africa, Australia and India were gradually built up.

‡There may also have been, in such sandstones as these, local re-formations as in the beds of streams or lagoons, composed of the same materials, and not

During this period Australia and Asia were in some way or other connected by land, so that Labyrinthodonts were enabled to pass from the great continent into these regions. Before long however, as Geological time is reckoned, this communication ceased to exist, and has probably never been re-opened.

The Wianamatta Lake, which closes the series, being drained by the excavation of the Hawkesbury gorge on the same method that is at work now at Niagara, concludes the record in New South Wales, which is not resumed until the commencement of the Cretaceo-Jurassic.

I cannot but conjecture that the age during which *Glossopteris* disappeared from New South Wales was the same that introduced *Glossopteris* into the Wairoa formation (Permian?) of New Zealand and the Indian Talchirs. The admission of the *Glossopteris* flora to Africa seems to be immediately followed by a subsequent immigration of the *Tæniopteris* flora. This seems to indicate an unbroken connection between E. Australia and S. Africa, doubtless by means of the Antarctic continent, and also suggests that the introduction of *Glossopteris* to Africa took place towards the close of its greatest development in Australia.

However this may be, we have good reason to suppose that the Indian Ocean of that time was a more or less closed or Mediterranean sea, and that by one means or other this *Glossopteris* flora was gradually extended over the whole outline of its coast, being fully developed in the Lower Gondwanas of India, where it is accompanied by Labyrinthodonts, and in the Beaufort shales of South Africa, where Reptilian remains are abundant. In this western area *Glossopteris* is not of long duration, but in India

to be distinguished lithologically from the original rock out of whose debris they are constructed. To such an accidental and long subsequent formation we must refer the remarkable *Ottelia præterita* F.v.M. Proc. Roy. Soc. N.S.W. 1879, p. 95, which seems to be Tertiary, and probably Eocene (see Baron v. Mueller's paper, l.c.), though found in what was believed to be true Hawkesbury sandstone.

the existence of this form is continued even into the cretaceous deposits of Cutch, where *Glossopteris* appears for the last time in the lower latitudes of the Northern Hemisphere, but still creeps northward until, during the Oolitic period, it becomes firmly established in Europe.

I hope on a future occasion to lay before you an abstract of the evidence which has been accumulated about these questions, without as yet having received a satisfactory interpretation ; but for the present I venture to conclude that the hypothesis of an Indo-Africo-Australian glaciated continent is improbable and unnecessary, and that the evidence of glacial action forms a most insecure basis for the determination of contemporaneous formation in different localities.

FLOREAT SOCIETAS LINNEANA.

On the motion of Mr. P. N. Trebeck a hearty vote of thanks was accorded to the President for his Address.

The Hon. James Norton, M.L.C., Hon. Treasurer, reported on the financial condition of the Society, showing a credit balance of £15 19s. 4d.

The following gentlemen were elected

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P. N. TREBECK, J.P.

INDEX TO VOL. III

(SECOND SERIES.)

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